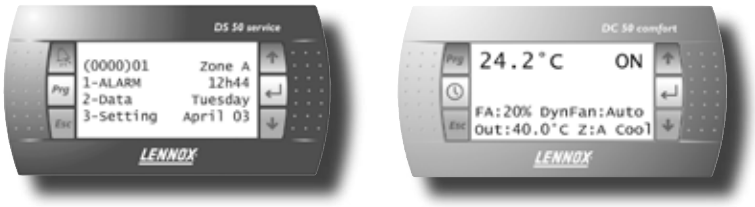
User manual
CLIMATIC™ 50 - CHILLERS

• • • Providing indoor climate comfort



CL50-CHILLERS-IOM-1105-E

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INTRODUCTION

CLIMATIC™50

The new generation of microprocessor based control, CLIMATIC™ 50 may be fitted to the Lennox chiller range. It inherits 15 years of technology and field operating experience from its predecessors the CLIMATIC™1 and CLIMATIC™ 2.
LENNOX has found the latest hardware technology available on the market place and developed a software specifically designed for water chiller applications, maximising the LENNOX units efficiency and performance.

Compatibility

This documentation is compatible with following programs:

- Ecologic ranges, from version 50.8
- Ecomax ranges, from version 50.4

WIRING CONNECTIONS AND COMMUNICATIONS

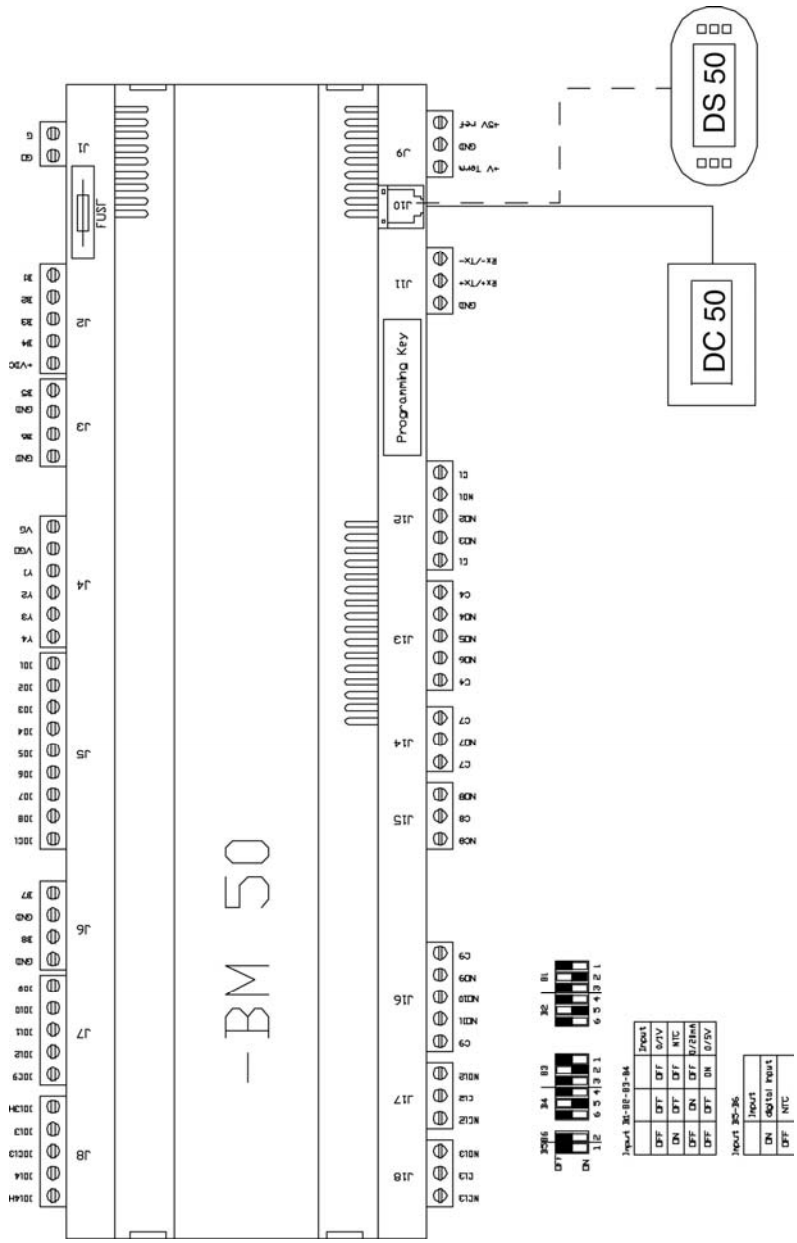
IMPORTANT WARNING

Any wiring modification on the CLIMATIC 50 must be done by Lennox technician or employees having valid electrical qualification and authorisation.

For any modification of wiring on the 24V supply or on 4-20mA sensor, check the polarity prior to apply the power. Wrong polarity may cause serious damage and destroy the Plan network. Lennox will not accept liability for damage caused by wrong power connection or any wiring modification done by people without valid training and qualifications.

CONNECTION DIAGRAM

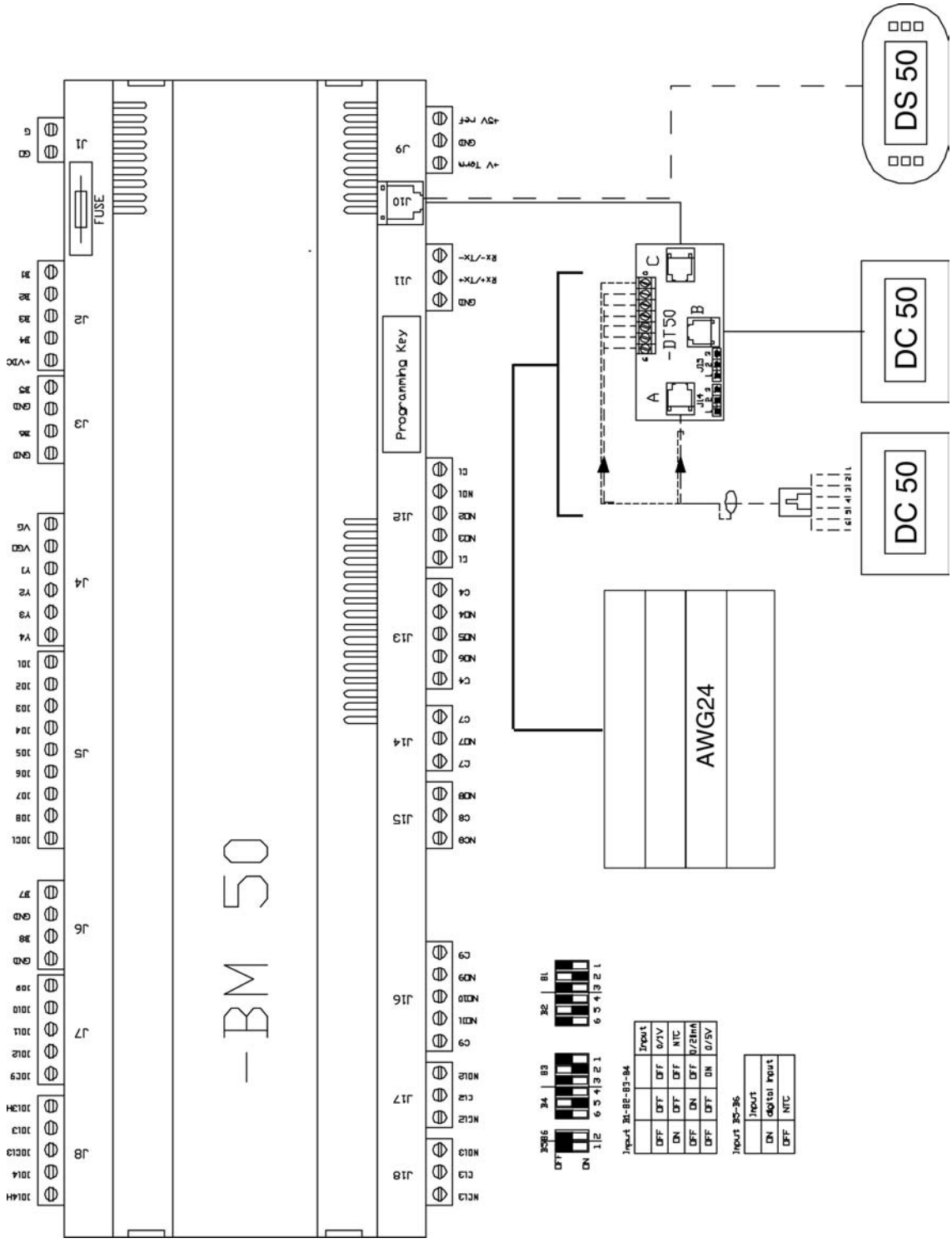
CLIMATIC™ 50 CONTROLLER



WIRING CONNECTIONS AND COMMUNICATIONS

CONNECTION DIAGRAM

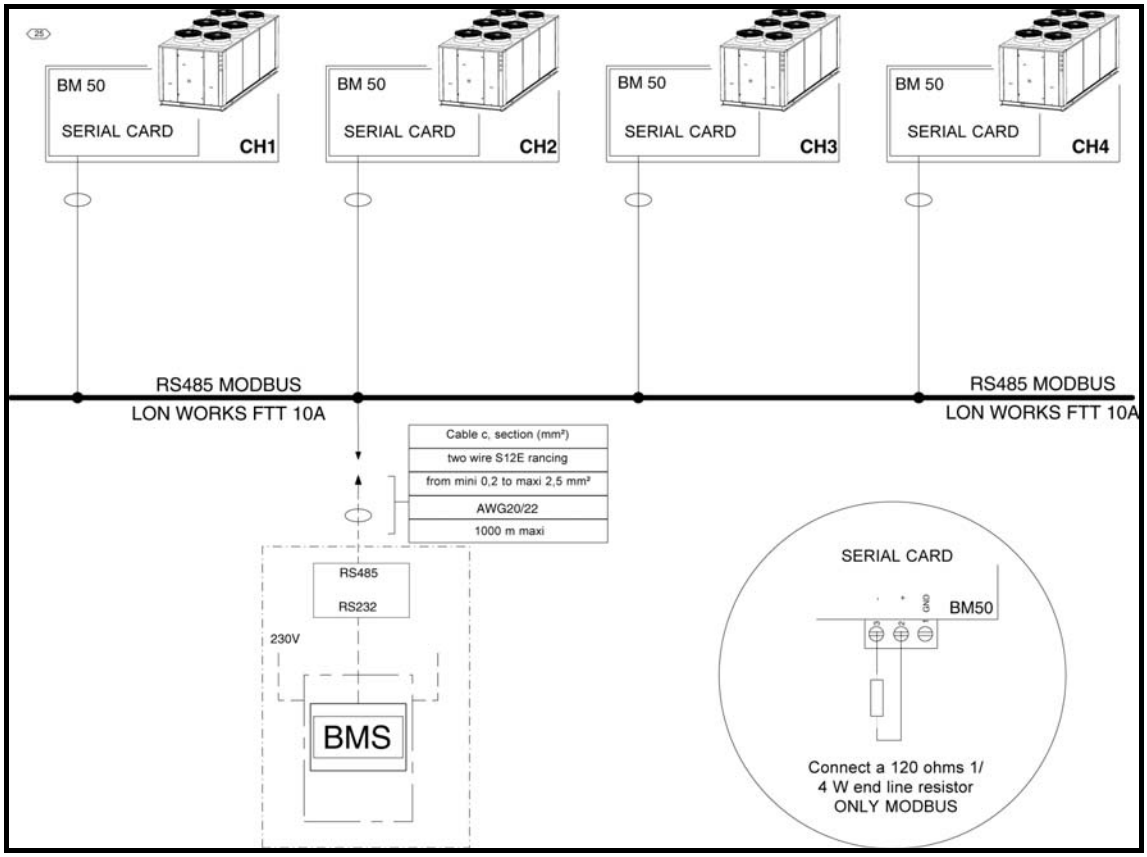
CLIMATIC 50 CONTROLLER - OPTION DC50 REMOTE CONNECTION



WIRING CONNECTIONS AND COMMUNICATIONS

COMMUNICATION

BMS



Function

This is used to link a Climatic to a BMS network for remote control of the unit.

Description

The Climatic 50 can communicate according to various protocols:

1. Climatic protocol for connection with KP06 (see specific KP06 manual) or other Lennox communication products (3932 = Climatic)
2. MODBUS Protocol (3932 = Modbus)
3. LONWORKS system (3932 = LonWorks)

MODBUS and LONWORKS address table are given at the end of this manual.

The identification number of each unit can be set (3931) and the communication speed is adjustable between 1200Bds and 19200Bds (3933).

MODBUS protocol
For this option the BM50 must be equipped with the board, PCO1004850
This card is used to interface BM50 to an RS485 network.
The card guarantees the optical isolation of the controller from the RS485 serial network.

On the Climatic, set point 3932 = ModBus

Transmission Mode = RTU
Baud Rate = set point 3933 (1200 / 2400 / 4800 / 9600 / 19200)
Word Length = 8
Parity = NONE
Stop Bits = 2

Device Id = set point 3931 (1 to 200)

LONWORKS protocol
For this option the BM50 must be equipped with the board, *PCO10000F0*
This card is used to interface BM50 to a LonWorks® network, by FTT-10A 78 kbs (TP/FT-10).

On the Climatic, set point 3932 = LonWorks

Baud Rate = set point 3933 (4800)

Device Id = set point 3931 (1 to 200)

Application

Normally the Climatic work on its calendar zones of operation (Zone A, B, C, Unoccupied).

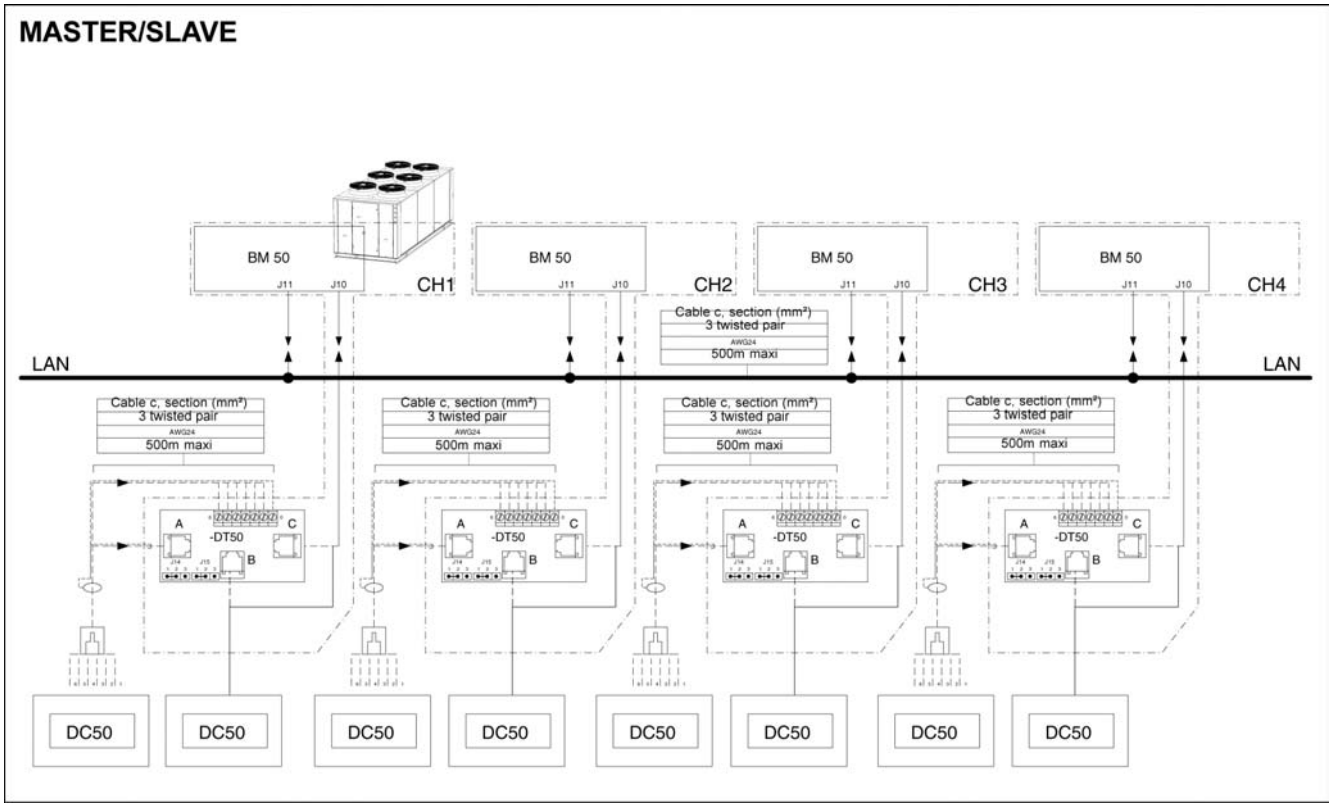
Warning: The points in writing received from the BMS are taken into account by Climatic only if mode BMS is activated ("Watchdog", address 3934)
The BMS mode is activated if the watchdog is different from zero (DS50 address 3934, Modbus analogical item1, Lonworks address I_Sp_BMS_Dog).

Every second, the Climatic 50 decreases the value of this address by 1. If this address reaches zero, then the Climatic 50 works as a stand alone unit in order to check continuously the communication with BMS. Normally, the BMS has to send a value to this address regularly (example 255 every 4 mn).

WIRING CONNECTIONS AND COMMUNICATIONS

COMMUNICATION

MASTER/SLAVE



Function

Link several units in order to allow a “Master/Slave” relationship in between each units

Description

Three modes are available and can be set up using following set points:

3922 → number of units linked (maximum 4 for Ecologic range, 2 for Ecomax)

3923 → Operation mode:

- Back-up mode
  One unit is the back-up unit and will operate if any of the other units has a failure.
- Rolling Back-up mode
  Same as above, except the "back-up" unit will change every Tuesday.
- Cascade mode
  No back-up unit. During start-up, the units’ capacity steps are started in cascade unit by unit.

In every case, the outlet water temperature (set point 3924) and/or the outside air temperature (set point 3925) used for regulation can be set by using following calculations:

- Not used → Each unit regulates with its own sensors
- M/S Temp → Slaves units regulate with Master sensors
- M/S Aver → Every units regulate with the global sensors average value

In every mode, for the management of safety, each unit remains independents.

LAN configuration

On the LAN network, each unit needs to be addressed:

- Unit n°1 → Master unit
- Unit n°2 to 4 → Slave units

For the configuration of each unit address on the LAN network, refer to DS50 Service display chapter.
Page 53 and above

Each DC 50 has to be addressed to its correspondent unit. In order to do so, please refer to DC50 Comfort Display page 43 and above.

Both operations must be done without network connection (connector J11 on BM50).

If a unit has electronic expansion valves, the driver address must be corrected as explained in the correspondent chapter page 20 and above.

SCHEDULING

Function

Controlling operation of the unit according to the time and day

Description

CLIMATIC™ 50 can handle 4 time zones over the 7 days of the week:

- Zone unoccupied
- Zone A
- Zone B
- Zone C

Starting time (hours and minutes) of each of these zones for each days of the week, can be set using menus 3211 to 3214, (press PROG key to change day).

3211 → Starting time Unoccupied Zone (hour,minute)
3212 → Starting time Zone A (hour,minute)
3213 → Starting time Zone B (hour,minute)
3214 → Starting time Zone C (hour,minute)

For each time zone the following set points can be adjusted:
.

1. Pump control type. Set point 3112, (refer to the "pump control" pages for more details).
2. Change Over rules for heat pump units. Set point 3311 must be set for each time zone
3. Heating and cooling temperature set points. Set point 3321 to 3325 for cooling and 3331 to 3335 for heating (refer to the control set point pages for more details)
4. Compressor operation. Set point 3411 (refer to the compressor operation pages for more detailed information)

With DS50, for each set point, press PROG key to change time zone and validate the right set point in the right zone

Note: "Monday" is the first day of the week for the scheduling on CLIMATIC™ 50

As a factory setting, only Zone A is activated 24hours a day, 7 days a week

ANTICIPATION – Heat pump mode only

Function

This allows an anticipated start-up in the morning depending on the outdoor temperature.

Description

This function only works for zone A, and allow the machine to move from unoccupied zone to zone A earlier if the outdoor temperature is under a certain value.

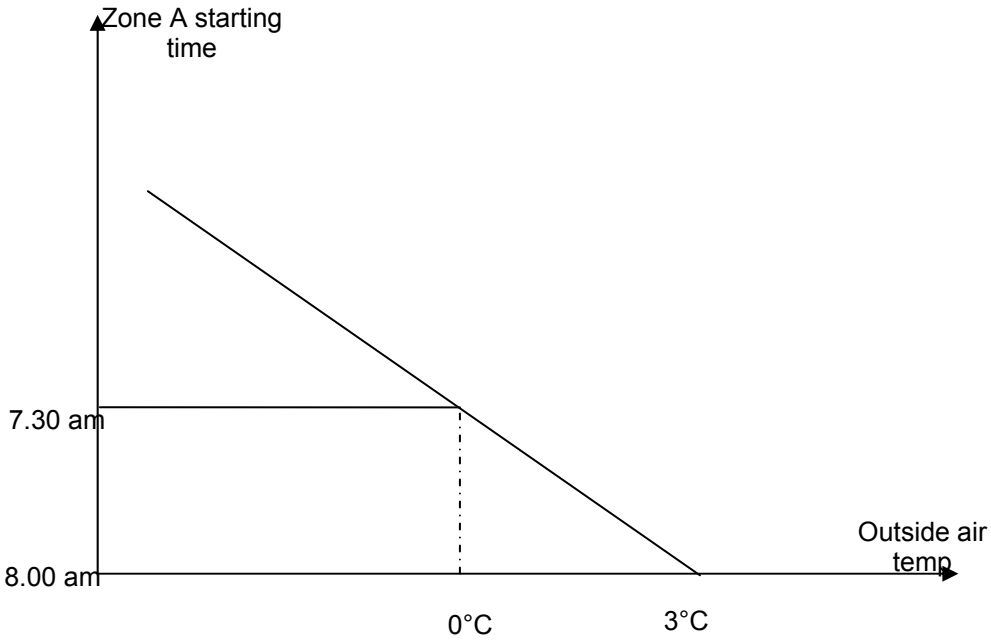
This will allow the unit to anticipate a cool day.

This can be adjusted with set point 3221 and 3222.

3221 → bottom of the slope (°C), Anticipation starting point .
3222 → Slope in Minutes of anticipation per degrees

Example:
WA chiller with Zone A starting at 8.00 am
3221 set at 3°C
3222 set at 10mn/°C

If outside temperature is 0°C, the zone A will start at 7.30 am



CHANGE OVER – REVERSIBLE UNITS

Function

For Reversible units only. This allows the reversible units to change automatically from winter to summer operation.

Description

This function will change the unit from production of hot water to production of chilled water automatically and can be set up with following set points:

3311 → Change over mode according to following values
- Cool. Only → cooling only
- Heat. Only → heating only
- Auto. → Automatic change over - pumps are running in dead zone
- Auto. Stop → Automatic change over – pumps are stopped in dead zone

3312 → Change over winter setting

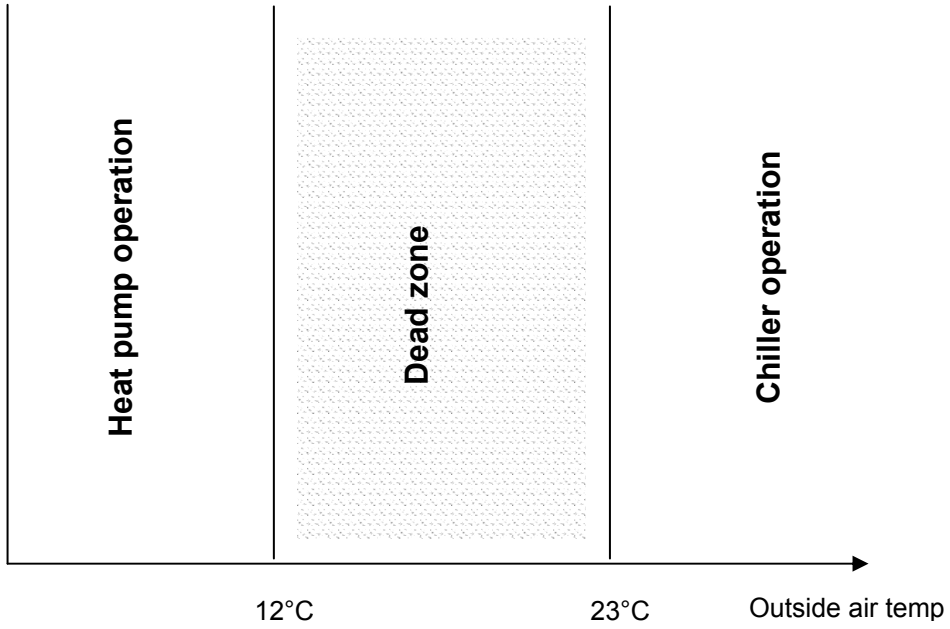
The set point 3312 is the outside air temperature under which the unit will operate as a heat pump.

3313 → Change over summer setting

The set point 3313 is the outside air temperature over which the unit will operate as a chiller.

Example:

3312 = 12°C
3313 = 23°C



EVAPORATOR PUMP(S) CONTROL

Function

Ensure the presence of a flow rate of heat transfer fluid in the evaporator heat exchanger.

Description

Seven types of control rules can be set. They are defined using the menu 3112 on the DS50 Service Display.

- If 3112 = Started ..... CLIMATIC™ 50 does not control the pumps
- If 3112 = Stopped, ... Pumps are stopped.
- If 3112 = P1 Only ..... CLIMATIC™ 50 Control only runs pump n°1.
- If 3112 = P2 Only ..... CLIMATIC™ 50 Control only runs pump n°2.
- If 3112 P1N P2R ..... CLIMATIC™ 50 Control handles both pumps with N°1 as standard and N° 2 as backup.
- If 3112 = P2N P1R ..... CLIMATIC™ 50 Control handles both pumps with N°2 as standard and N° 1 as backup.
- If 3112 – Clock ..... CLIMATIC™ 50 control handles both pumps equalizing running times and switching from one pump to the other every Tuesday at 18h00.

This

Pump N°1 is running if all of the following conditions are met:

⇨ At least one ON/OFF of circuit “n” is ON
⇨ Unit remote ON/OFF is ON *
⇨ NOT in the unoccupied zone*
⇨ Set point 3112 is not set to “Stopped”
⇨ Configuration 3841 is not set to “No”
⇨ Pump has been stopped for 1 minute or is already running.
⇨ There is no electrical fault on the pump
⇨ There is to « flow rate » fault

* These conditions are ignored if the outdoor temperature is below set point 3341 + 1°C and if the outlet water temperature is below set point +1°C, in order to prevent the water from freezing.

A pump can be controlled by the CLIMATIC™50 even if electrically the network pump is not handled by the refrigeration unit.

In the case where the customer is handling the control of his own pump, the following procedure must be followed:

- Start the pump at least 1 minute before validating the remote ON/OFF switch operation.
- Switch off the pump 2 minutes at least after the remote ON/OFF switch has gone to 0.

In the case of double pumps

The pump N°k is running if all of the following conditions are met:

- ⇨ The conditions detailed above for the single pump must be met for the pump k
- ⇨ In the case of forced operation, pump N°k is running (set point 3112 is set to “P1 Only” for pump N°1 and “P2 Only” for Pump N°2)
- ⇨ When running « Standard/Backup » Operation, pump N°k has priority (Set point 3112 set to “P1NP2S” for Pump N°1 and “P2NP1S” for pump N°2).
- ⇨ In the case of “equalized run time” operation the running time of pump N°k is the smallest

In case of a fault on a pump when the set point 3112 is set to « P1NP2S », « P2NP1S » or « Clock », the second pump, if available, will automatically start.

NOTE: CLIMATIC™ 50 control only stops the pumps 2 minutes at least after the request to switch the whole unit OFF has been given, in order to prevent any risks of freezing the evaporator heat exchanger.

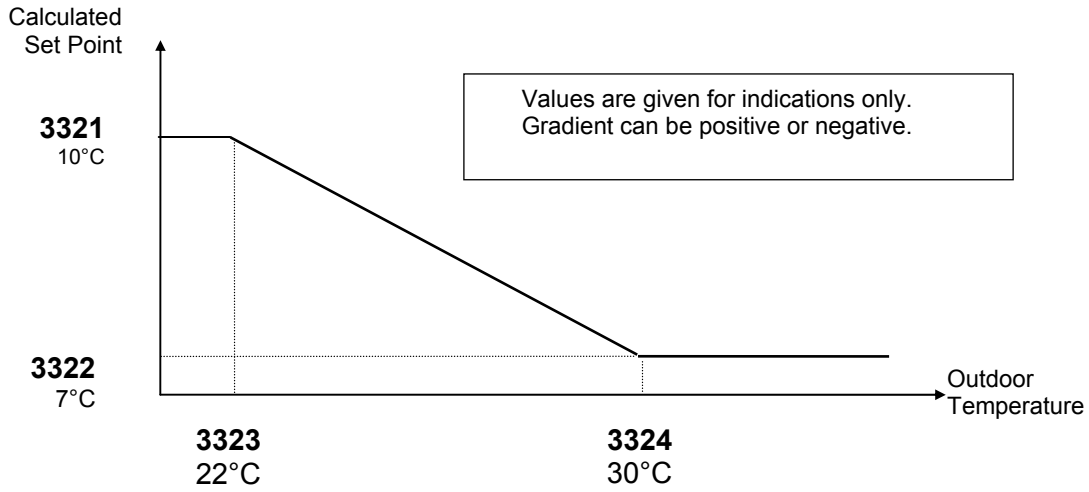
THERMOSTAT – Set point calculation

Function

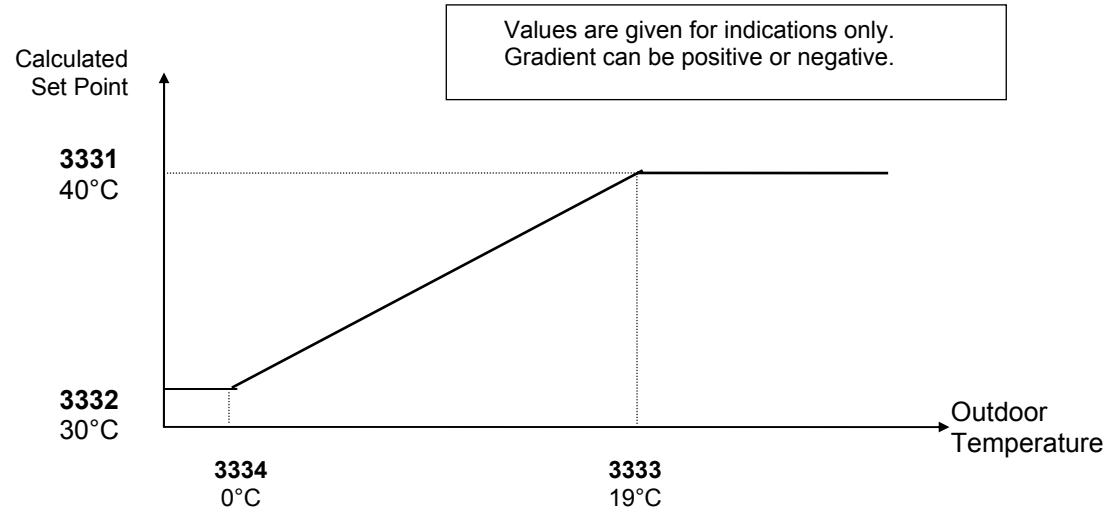
Set the chilled or hot water circuit temperature, depending on the outdoor conditions in order to optimise the energy consumption.

Description

Calculation of the chilled water set point :



Calculation of the chilled water set point:



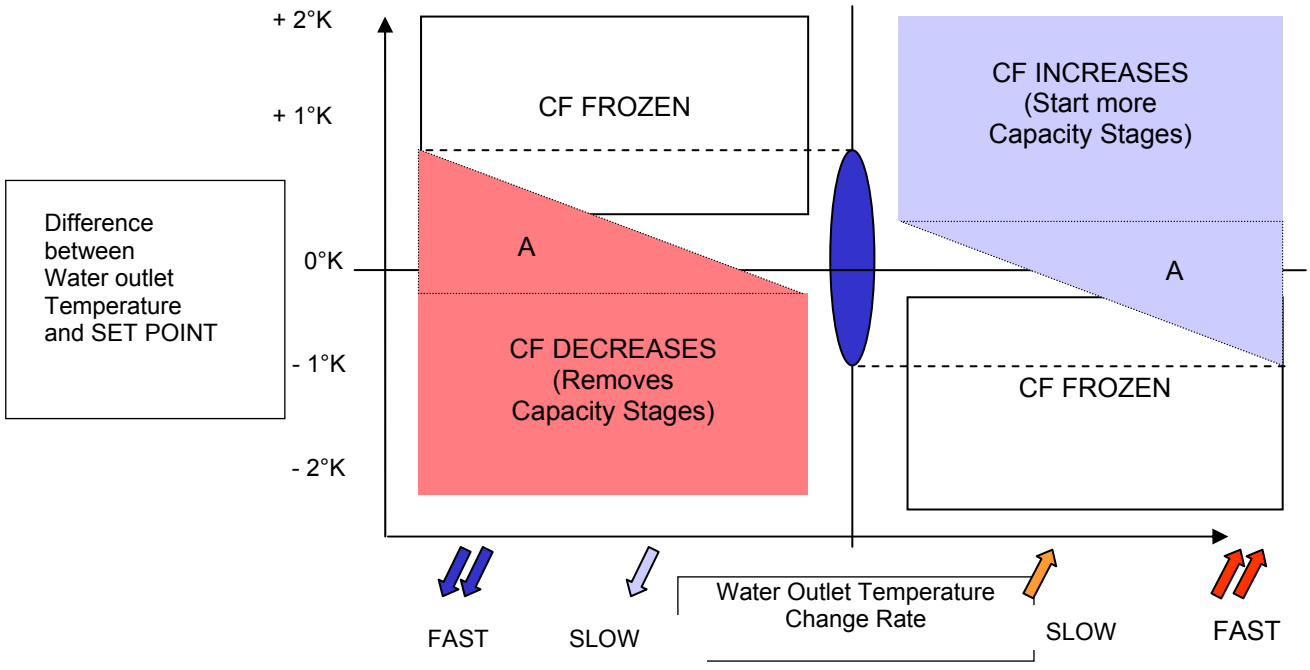
THERMOSTAT - Control principle

Function

Adjust and hold the fluid outlet temperature as close as possible to the set point, by controlling the number of compressor stages depending on the thermal load on the system.

Description

CLIMATIC™50 control constantly calculates the required capacity to reach the temperature set point.
This variable is called “CAPACITY FACTOR” (CF) and its value can vary from 0 to 100%.
It is directly linked to the number of control stages of the unit.
i.e.: For ecologic WA 230D K STD with 6 control stages, the CF will start and stop a stage at the following values:**0-17-33-50-67-83-100**
It then evolves following the principles detailed in the diagram below (This applies to a chiller):



In any Cases, for a chiller, if the Low Water temperature limit is reached, Compressors are stopped.

In order to anticipate, the reference point is recalculated each time the difference between water temperature and set point reach a minimum or a maximum.

The rate of change of the Capacity Factor (CF) is determined by another parameter called “REACTIVTY” and which value is in:

% of CF / °C (Diff vs Set point) / min

REACTIVITY for Cooling Mode can be adjusted in menu 3325
REACTIVITY for Heating Mode can be adjusted in menu 3335

COMPRESSOR CONTROL

Function

Compressor stages are started and stopped in a pre-determined order which minimized the effect of the « anti- short cycle protection and equalized running time.

Description

☞ *Compressor Starting and Stopping Sequences*

This Sequence is determined by the calculated compressor running time. This control also includes the automatic and instantaneous back up of a compressor by another one if it becomes unavailable.

☞ *Starting and Stopping Compressors*

Compressor XXX starts if all the following conditions are met :

- ⇨ *The water circulation pump has been running for at least 1 minute.*
- ⇨ *Remote ON/OFF switch for the complete unit is ON*
- ⇨ *The ON/OFF control for the considered circuit is ON*
- ⇨ *The unit, the compressor and the circuit do not have any "Majors Alarm" ON*
- ⇨ *The control requires the start-up of a compressor.*
- ⇨ *XXX is the compressor with the lowest run time amongst the stopped compressor. To see the run times for each compressor refer to menu: 2419, 2429….2469*
- ⇨ *Compressor XXX was not started for at least 6 minutes. The state of each compressor can be checked in the following menu: 2412*, 2422, 2432…, 2462

HIGH PRESSURE UNLOADING

Function

Reduce the capacity of a refrigeration circuit before the HP cut out is reached

Description

High Pressure Unloading consists in reducing the variable capacity on a screw compressor, or to stop one compressor on units fitted with tandems or trios.

☞ *Activation of High Pressure Unloading*

If High Pressure is over 26.5 bars (Ecologic, MCC with scroll compressors) or 23.5 bars (other units) and carries on increasing as all the fans are running full speed, one compressor is stopped, or one stage of capacity reduction is activated on the affected circuit.
High Pressure Unloading is controlled as an additional virtual ventilation stage while the HP is over the threshold. See explanation in the fan control section.

DEFROST – Heat Pump

Function

Avoid the ice on the Evaporator while the reversible unit works in winter operation

Description

To avoid the icing of the external air exchanger in winter operation, it is necessary to reverse the refrigerant cycle on a regular basis to de-ice by heating the exchanger.
The defrost is activated when the air temperature is under a set point (3432) and the LP is lower than a set point (3433)

While defrost is demanded, the defrost cycle is as following:

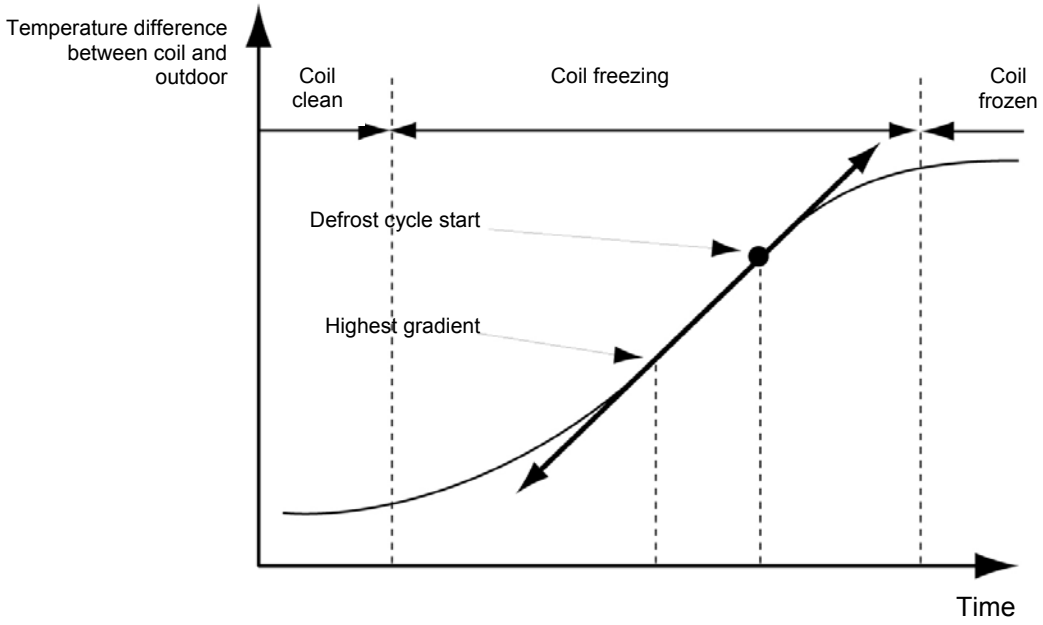
1. Stop compressor and fans
2. wait 5s
3. reverse 4 way valve
4. wait 5s
5. start compressor
6. When HP reach 22b or compressor are running for more than 4 minutes, stop compressor
7. wait 5s
8. reverse 4way valve
9. start fans at full speed in order to dry the exchanger for a period that can be adjusted with set point 3435.
10. end of defrost

Two different type of Defrost demand are possible:

- Dynamic defrost (set point 3431 = Dynamic)
- Cycling defrost (set point 3431 = Cyclic)

Dynamic defrost

This allows the unit to start the defrost cycle only when required. This is achieved through the measurement of the temperature difference between the coil and the outdoor. The defrost will be initiated shortly after the Climatic50 has located the largest gradient in the curve.



Cycling defrost

The unit will start a defrost cycle with a regular time period (set point 3434)

Defrost parameters summary:

3431 → Defrost mode: dynamic – cyclic
3432 → Outside air temperature under which the defrost cycle is activated
3433 → LP temperature under which the defrost cycle is activated.
3434 → For the dynamic defrost the unit will run this minimum amount of time. For cycling defrost, this is the time delay to start the defrost once the temperature conditions are met
3435 → Fan running time after the defrost cycle in order to dry the exchanger.

DRIVING THE ELECTRONIC EXPANSION VALVE

Function

Control the adequate filling of the evaporator heat exchanger with refrigerant, in order to get the best efficiency, while allowing a good protection of the compressor against liquid slugging

Description

The electronic expansion valves used on units fitted with CLIMATIC™ 50 are controlled using the EVD200 Driver

This driver is design to communicate with the CLIMATIC™ 50 main control board through a "pLan" BUS.

The driver can be set up using the following DS50 menus:

3511, 3521, 3531, 3541 → Superheat circuit 1, 2, 3, 4
3512, 3522, 3532, 3542 → Anticipation circuit 1, 2, 3, 4
3513, 3523, 3533, 3543 → Proportional Factor circuit 1, 2, 3, 4
3514, 3524, 3534, 3544 → Integral Factor circuit 1, 2, 3, 4
3515, 3525, 3535, 3545 → Derivative Factor circuit 1, 2, 3, 4

It is highly recomended NOT TO CHANGE the factory setting of the EVD Driver

The Anticipation factor allow the pre-opening of the EEV during circuit start-up and is calculated according to the capacity at start up.

Futhermore the EVD Driver is fitted with Leds indicating its status:

Power (Green) → Shows the power is ON
Open (Green) → Flashes during the expanion valve Opening – Stays ON when the expansion valve is Fully Open.
Close (Green) → Flashes during the expanion valve Closing – Stays ON when the expansion valve is Fully Closed.
Error (Red) → Stays ON when Alarm is ON (Refer to Faults and Alarms section)
pLan (Green) → Stays ON when the communication is established with CLIMATIC™ 50 – Flashes when the communication is disturbed or broken.

Connexion with BM50

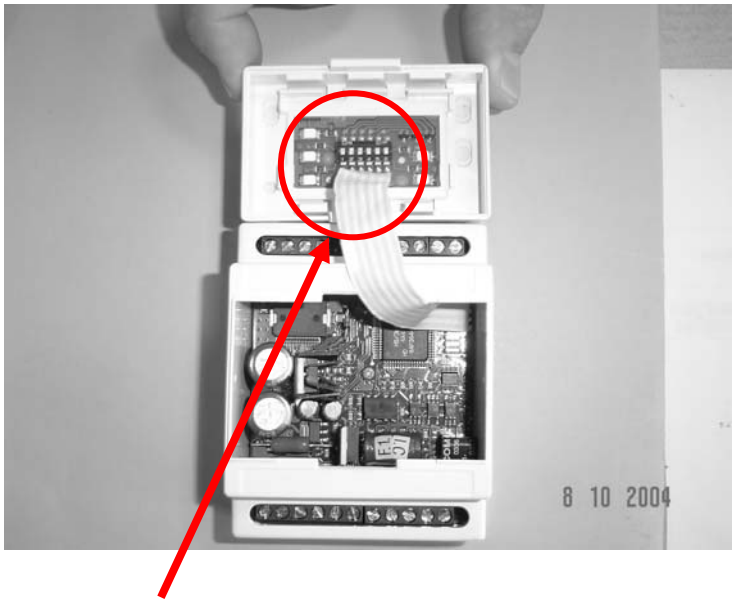
The address of each expansion valve driver must be set-up in order to ensure a good communication between the Climatic 50 and the diver.
The address can be changed by using the dip switches that are under the Driver cover.

Addresses must follow the rules hereunder:

Ecologic n°	BM50 address	Driver circuit n°1 address	Driver circuit n°2 address
1	1	5	6
2	2	7	8
3	3	9	10
4	4	11	12

Ecomax n°	BM50 address	Driver circuit n°1 address	Driver circuit n°2 address	Driver circuit n°3 address	Driver circuit n°4 address
1	1 2	5	6	7	8
2	3 4	9	10	11	12

The dip switches have to be positioned according to the following table:



	SW1	SW2	SW3	SW4	SW5
Address\Weight	1	2	4	8	16
5	ON	OFF	ON	OFF	OFF
6	OFF	ON	ON	OFF	OFF
7	ON	ON	ON	OFF	OFF
8	OFF	OFF	OFF	ON	OFF
9	ON	OFF	OFF	ON	OFF
10	OFF	ON	OFF	ON	OFF
11	ON	ON	OFF	ON	OFF
12	OFF	OFF	ON	ON	OFF

CONDENSING FANS CONTROL

Function

Maintain the condensing pressure as stable and as low as possible in order to increase the unit performances, while avoiding excessive cycling.

Description

Identical to the complete machine control logic, the CLIMATIC™ 50's aim is to reach and hold the high pressure set point. However the fan control includes a dead zone ensuring a greater stability to the High Pressure and avoiding starting and stopping the fans too frequently.

Can be adjusted using menus
3611 = High pressure control set point in bars (relative pressure)
3612 = Reactivity

Operation

On a unit with N fans per circuit, the number of stages follows the table hereunder:

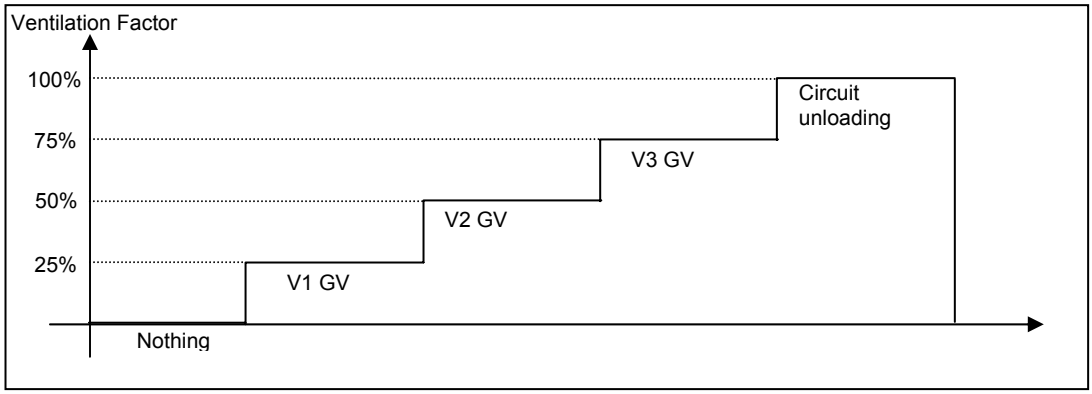
	Number of Stages		
Model	**PV with PWM**	**PV**	**GV**
WA/RA STD/HE/SLN	1	0	N-1
WA LN	1	N-1	0

Where: PV: Low speed Fan Operation
GV: High Speed Fan Operation
PWM: Pulse Width modulation (only on PV)

CASE 1 Unit **without** PV or PWM

The **Ventilation Factor** "**V.F.**" is calculated using the evolution of High Pressure (measured using the HP sensor) and the rate at which it is moving away or towards the High Pressure Set Point (3611). See diagram page 12.
It also includes a dead zone of 5 bars (4 bars if the unit has glycol and water set point <0°C) and a sampling time constant of 15 seconds.
As for capacity control, the **reactivity** will fasten or slow down the **VF** evolution

Example: Unit with 3 fans, one circuit and HP set point 3611 is set to 15 bars
- Pressure > 15 bars → **V.F.** increasing
- 10 bars < Pressure < 15 bars → **V.F.** unchanged
- Pressure < 10 bars → **V.F.** decreasing



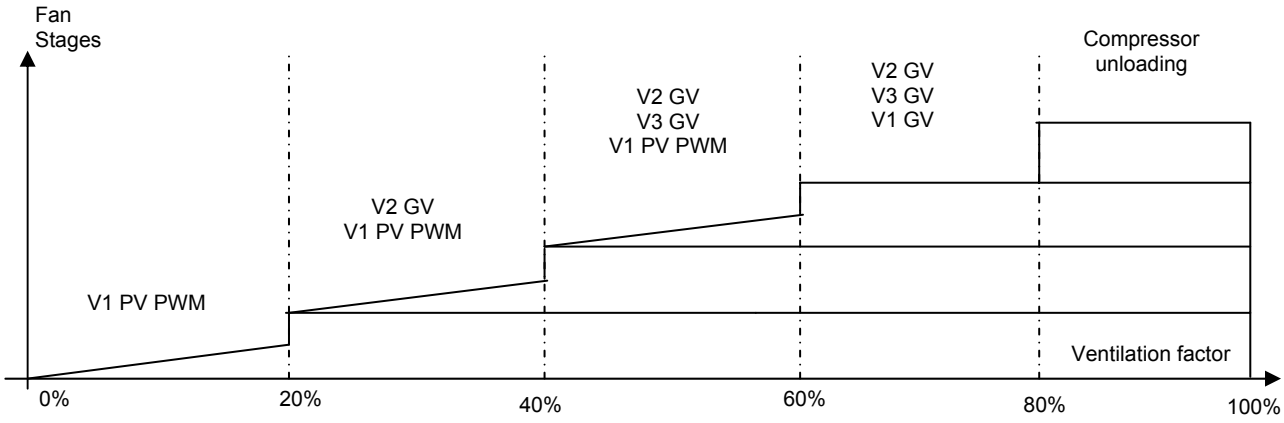
CASE 2 Unit **with** PV or PWM

The **Ventilation Factor** "**V.F.**" is calculated using the High Pressure measured using the HP sensor and the rate at which it is moving away or towards the High Pressure Set Point (3611). It also includes a dead zone of 5 bars and a sampling time constant of 15 seconds.
If menu set point 3611 is set to 15 bars

- Pressure > 17 bars → **V.F.** increasing
- 12 bars < Pressure < 17 bars → **V.F.** unchanged
- Pressure < 12 bars → **V.F.** decreasing

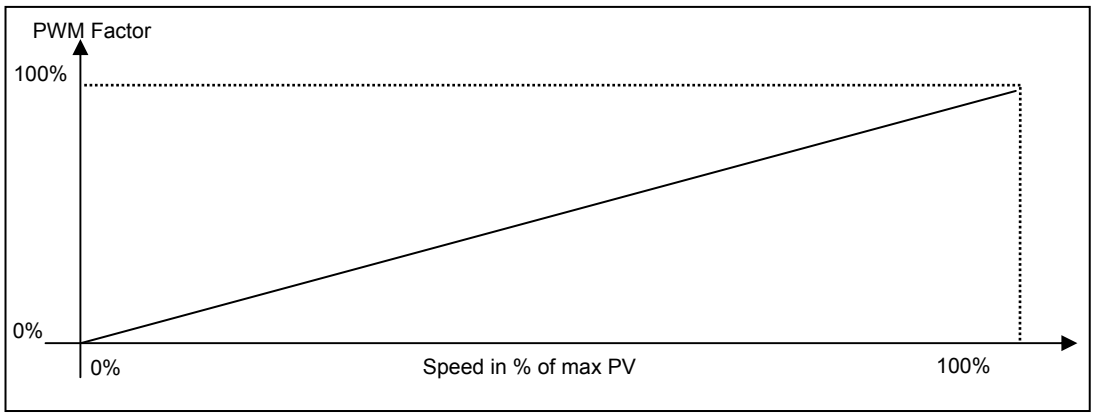
Ventilation Factor "**V.F.**" can be seen in menu 2222 to 2225 on the DS50

For example on a unit with 3 Fans



The "**PWM factor**" which is used to adjust the speed of the fan when it is running in PWM
This **PWM Factor** "**PWM.F**" is calculated using the High Pressure measured using the HP sensor and the rate at which it is moving away or towards the High Pressure Set Point (3611). The sampling time constant is 5 seconds.
If menu set point 3611 is set to 15 bars

- Pressure > 15 bars → **PWM.F.** increasing
- 14 bars < Pressure < 15 bars → **PWM.F.** unchanged
- Pressure < 14 bars → **PWM.F.** decreasing



Value for **PWM.F** can be seen on menu 2619, 2629, 2639 and 2649 on a DS50

CUSTOMIZED INPUT / OUTPUT (BE.50)

Function

With the optional expansion board BE.50, it is possible to customize some input / output for remote control of the unit. So it is possible to customize:

- 4 digital outputs NC or NO (connectors J5, J6, J7, J8) set up with parameters 3851, 3852, 3853 and 3854
- 4 digitals inputs (connectors J4 ID1, ID2, ID3, ID4) set up by parameters 3861, 3862, 3863 et 3864
- 4 analogical inputs (4-20mA or Lennox NTC temperature probe on connectors J9 B1, B2, B3 and B4), set up with parameters 3871, 3872, 3873 et 3874

Description

So it is possible to set up the following functions:

With 3851, 3852, 3853 and 3854 - digital output NC or NO free contacts - following information could be recovered on each contact:

- Fault fans or pumps or water flow or Cicuit1, 2, 3 or 4.
- Heating mode
- 100% on Circuit 1, 2, 3 or 4
- Unit fully loaded – 100%
- Unit ON
- Unoccupied mode
- zone A, B ou C
- BMS mode

With 3861, 3862, 3863 et 3864 - digital input 24V AC or DC – following orders can be sent on each contact:

- Switch water set point (set point 1 / set point 2)
- Force Heating mode
- Force cooling mode
- Disable circuit 1, 2, 3 or 4.
- Force unoccupied mode

With 3871, 3872, 3873 et 3874 – analogical input 4-20mA or Lennox NTC probe (J9 B1, B2, B3 et B4) – It is possible to make the following actions:

- Set point offset(*)
- Free temperature probe connection. The measured value will be displayed on following addresses 2191, 2192, 2193 or 2194.

(*) The 4-20mA signal sent to the unit is converted linearly using a -5K to +5K range of temperature set point.
For example**:**
For a unit set point of 7°C supply temperature, a 20mA signal will give a 12°C return temperature set point.

In any case, with a unit running with clear water, the chilled water supply temperature set point CAN NOT be adjusted to a value below 6°C.

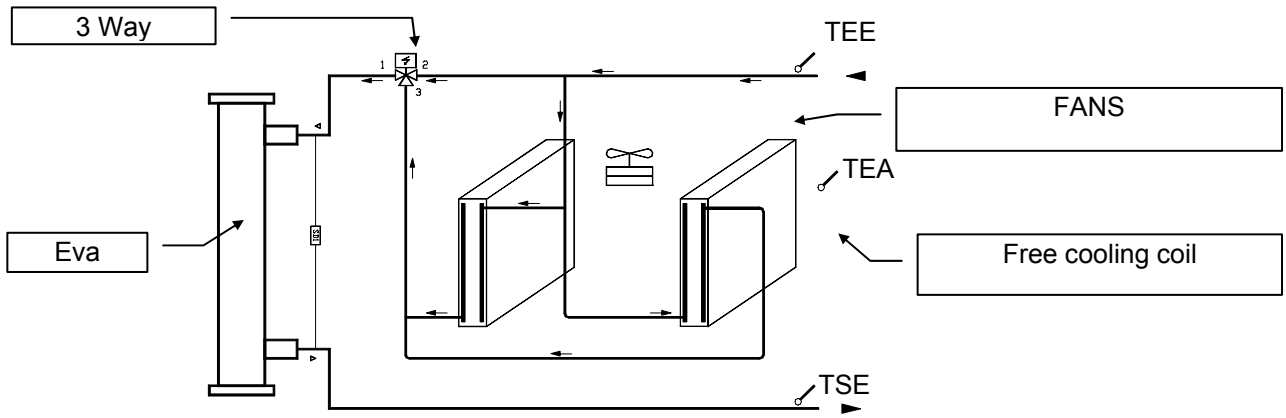
FREE-COOLING

Function

Ensure optimum cooling capacity though the use of free cooling, therefore reducing electrical consumption.

Description

☞ *Free-cooling principle*



TEE ⇔ Inlet water temperature (°C)
TSE ⇔ Outlet water temperature (°C)
TEA ⇔ Outdoor air Température (°C)

☞ *Control of the free-cooling 3 way valve*

3 way valve is activated if the following conditions are met.

⇨ The unit is running
⇨ TEA is below the TEE.
⇨ Chilled water circulation pump has been running for at least 30 seconds

☞ *Control of the free-cooling fans*

In the case where the free cooling fans are the same as the main refrigeration circuit fans, (which is the most popular mode for Lennox units), they are constantly running if the compressors are stooped and if the chilled water outlet temperature is above the set point defined in menu 3321 and 3322.
When a compressor starts, the fans run as without free-cooling.

In the case where the free cooling fans are independent from the main refrigeration circuit fans, they are running for as long as the chilled water outlet temperature has not been reaching the set point defined in menu 3321 and 3322.

☞ *Compressor Operation*

For the compressor control, if the outside temperature is lower than the water entry temperature, the free-cooling is considered as an additional first compressor stage by the regulation.

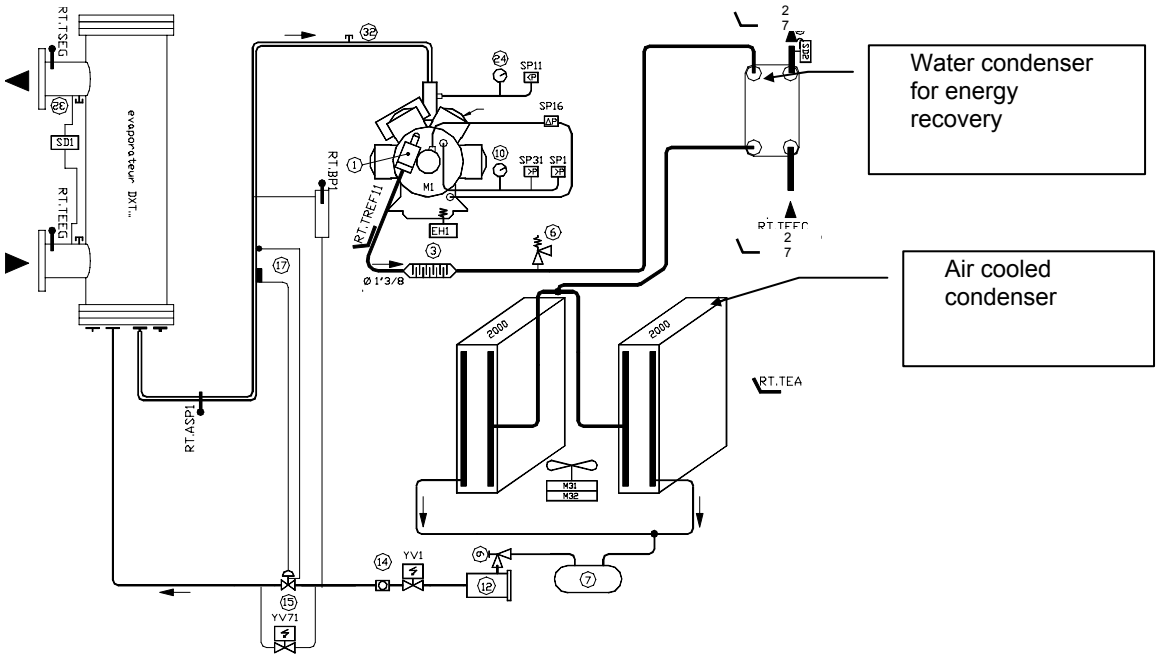
ENERGY RECOVERY

Function

Ensure optimum cooling capacity by improving the performance of air cooled chiller with energy recovery system

Description

☞ *Energy recovery Principle*



☞ *Activation of the energy recovery function*

The energy recovery function on the Chiller is activated by switching the menu 3843 to “ON”

☞ *Condenser fans control*

When switching to energy recovery mode (Activation of the flow switch + 5s) the fans of the considered circuit are stopped by forcing the fan’s capacity factor to 0%.

Then the fans are controlled as usual

FAULT CODES

CHILLED WATER TEMPERATURE, OUT OF RANGE

Fault Code: **012, 013, 022, 023**

Description

Water Inlet or Outlet Temperature measured by the temperature sensor is outside the authorised range, this range can vary depending on the presence or not of glycol with the chilled water (factory setting)

TE < set point 3341 (chilled water min set point) or TE > set point 3342 (Hot water max set point)
TS < set point 3341 (chilled water min set point) or TS > set point 3342 (Hot water max set point)

Where:

TE	⇔	Water inlet Temperature (°C)
TS	⇔	Water outlet Temperature (°C)
3341	⇔	Minimum chilled water Temperature at evaporator (°C)
3342	⇔	Maximum chilled water Temperature at evaporator (°C)

Action

☞ Compressor immediate shutdown

☞ A fault signal is shown on the display.

- 012, Outlet water T° too high
- 013, Intlet water T° too low
- 022, Outlet water T° too low
- 023, Intlet water T° too high

☞ The remote fault signal is delayed by 6 minutes

Reset

Automatic reset of the fault signal as soon as the chilled water temperatures comes back in the authorized operating range with a safety offset of 2°C on the chilled water and 5°C on the hot water.

Water
Set point 3341+2°C < TE < set point 3342 -5°C
Set point 3341+2°C < TS < set point 3342 -5°C

Possible causes	Solving the problem
Faulty Chilled water inlet or outlet temperature probes	Replace the probe.
Wiring problem with the probes, disconnect the sensor.	Check the probe connections.

INSUFFICIENT WATER FLOW RATE

Fault Code: **001**

Description

The flow switch FSE is detecting a low water flow rate in the evaporator heat exchanger for more than 3 seconds

Action

- ☞ Immediate shutdown of the whole unit.
- ☞ A fault signal is shown on the display.
- ☞ The remote fault signal is delayed by 6 minutes

Reset

The unit restarts **automatically, 20 seconds** after the flow switch detects a flow rate.

Possible causes	Solving the problem
Problem with the pump control wiring.	Check the pump connections
Problem with the flow switch wiring	Check the flow switch connections
Dirty or clogged water filter.	Clean the water filter.
Wrong setting of the flow switch.	Check the flow switch settings.

COMMUNICATION WITH THE EXTENSION BOARD

Fault Code: **071**

Description

The communication between the BM50 and the BE50 is down.

Action

Alarm signal is ON
The unit carries on running

Reset

The fault signal disappears **automatically as soon as the communication is back on line**.

Possible causes	Solving the problem
Damaged BM50 or BE50	Replace the defective component
Bios mal function	Update Bios up V3A.57 or 3.64 and above
Wrong wiring or loose connection between BM50 and BE50	Check connections and wiring.

LOW PRESSURE CUT OUT

Fault Code: **1n7**

Description

The low pressure cut out limit depends on the type of refrigerant which is inside the circuit and is defined as following:

R407C ⇨ 1,5 bar abs. (Or –28°C Vapour Saturated Temperature).

One compressor on circuit n does not work for 2 minutes and in the case of a unit with low ambient kit and Thermostatic Expansion Valve, the TXV bypass valve has been closed for 1 minute, but the low pressure is too low.

NOTE: Only units with thermostatic expansion valves and Low ambient kit options are fitted with TXV bypass.

Action

- ☞ If the Low Pressure of a circuit is below the safety limit for more than an hour, then the considered circuit is not allowed to start again.
- ☞ This circuit is shut down immediately.
- ☞ A fault signal is shown on the display.
- ☞ The remote fault signal is delayed by 6 minutes.

Reset

Automatic reset of the fault signal as soon as the low pressure moves above the “CUT OUT” limit

If the low pressure fault is activated more than three times during the same day, the fault signal is locked out and must be reset manually.

The auto reset limits are detailed below

R407C ⇨ 2.5 bars abs. (or –16°C saturated vapour temperature).

Note: Fault counter is cleared and reset every day at 10 am, as long as the maximum number of faults has not been reached.

Possible causes	Solving the problem
Not enough refrigerant in the circuit.	Adjust the refrigerant charge
Faulty expansion valve.	Check the good working of the expansion valve.
Dirty filter drier.	Change the filter drier
Faulty low pressure sensor.	Replace the low pressure sensor.

EVAPORATOR FREEZING PROTECTION

Fault Code: **1n8**

Description

This fault signal is activated on units chilling water without frost protection additives (Water without Glycol or Brine) and with thermostatic expansion valves.

One compressor from the considered circuit n has been running for at least 2 minutes and the saturated temperature TBPn is lower than the set point 3421 for more than 5 seconds (for units filled with R407c).

This safety feature is disabled for 2 minutes after start-up or stop of a compressor or a fan on the considered circuit.
With:

TBPn	⇔	Evaporating Temperature of circuit n - dew point (°C)
3421	⇔	Minimum Evaporating Temperature (°C)

Action

- ☞ Immediate shutdown of circuit n
- ☞ Fault signal sent to the control display.
- ☞ The remote fault signal is delayed by 6 minutes

Reset :

The first 3 faults are **automatically** reset
After three faults the circuit n can only be restarted by a **manual reset**

Note:

Fault counter is cleared and **reset every day at 10 am**, as long as the maximum number of faults has not been reached.

Possible causes	Solving the problem
Faulty LP pressure sensor	Replace the pressure sensor.
Faulty wiring or loose sensor connection.	Check pressure sensor connections and wiring.
Insufficient water flow rate in the evaporator.	Check flow rate and adjust flow switch if necessary.
Clogged evaporator	Clean evaporator.
Check set points	Replace pressure sensor.

FAULTY PROBES AND SENSORS

Fault Code: **081, 083, 086, 087, 089, 1n1, 1n2, 2n6**

Description

One or more temperature probes or pressure sensors located on circuit n or elsewhere are short circuited, cut or disconnected.

Probe or sensor affected by the problem
Water inlet temperature probe → code 081
Water outlet temperature probe → code 085
Air temperature probe → 083
Heat recovery exchanger inlet temperature probe → code 086
Heat recovery exchanger outlet temperature probe → code 087
High Pressure Sensor → Code 1n1

Unit without EEV
Low Pressure Sensor → Code 1n2

Unit with EEV
Low Pressure Sensor or suction probe → Code 2n6

Action

- *Immediate shut down of circuit n for faulty sensors.*
- *Immediate shut down of ALL circuits for faulty water outlet temperature and air temperature probes.*
- *No shut down for the other faults.*
- *Fault signal shown on the display.*
- *The remote fault signal is delayed by 6 minutes.*

Reset

The unit returns to normal operation after the signal from the faulty probes or sensors is re-established.

Possible causes	Solving the problem
Damaged probes or sensors	Remplace probe or sensor
Wrong wiring or loose connection on a probe or sensor	Check probes and sensors connections and wiring.

COMPRESSOR ELECTRICAL PROTECTION

Fault Code: **1n4**

Description

During start up or operation of a compressor m:

- The thermal magnetic trip breaker or the compressor internal protection from circuit n is tripped
- The phase rotation protection has detected an incorrect connection (standard on screw compressor and available as a special request on other units)
- The discharge line thermostat is tripped out (screw compressors only)

Action

☞ Immediate shut down of compressors m from circuit n.
☞ Fault signal shown on the display.
☞ The remote fault signal is delayed by 6 minutes.

Reset

If the fault signal comes from the internal compressor protection, it can be automatically reset. In this case, Climatic 50 will restart the concerned circuits 30 minutes after shutdown.
After three **automatic** reset of the compressor fault signal, the circuit n can only be restarted by a **manual reset** of the fault signal.

Important: For manual reset of ZR 380 internal protection cut off; if the problem comes from a high discharge temperature, wait for 30 mn prior to any manual reset to allow the scroll temperature to decrease sufficiently. If the temperature is still too high, the compressor will trip again just after starting.

Notes:

Fault counter is cleared and **reset every day at 10 am**, as long as the maximum number of faults has not been reached.

The fault signal is reset automatically with each powering of the unit

Possible causes	Solving the problem
Wrong wiring or tightening of the connections.	Control all connections
Wrong setting on the circuit breaker	Set circuit breaker according with compressor normal running current

HIGH PRESSURE TOO HIGH

Fault Code: **1n5**

Description

High pressure switch from circuit n has tripped.

Action

- ☞ Immediate shut down of circuit n.
- ☞ Fault signal shown on the display.
- ☞ The remote fault signal is delayed by 6 minutes

Reset

The first 3 faults are **automatically** reset
After three faults the circuit n can only be restarted by a **manual reset**

Notes:

Fault counter is cleared and **reset every day at 10 am**, as long as the maximum number of faults has not been reached.

Possible causes	Solving the problem
Dirty condenser.	Clean the condenser.
Wrong setting on the condenser control.	Check the settings of the controller.
Wrong operation of the liquid line solenoid valve	Check the operation of the solenoid valve.
Fan out of order	Change the fan
Wrong wiring or wrong setting of the high pressure, pressure switch.	Check the wiring and the setting of the HP switch.
Dirty Filter Drier	Change the filter drier.

INSUFFICIENT FLOW RATE PROVIDED BY THE PUMP

Fault Code: **001 040**

Description

Pump k supplying flow rate to the evaporator has been ordered to start for **20 seconds.**
The flow switch FSE is detecting insufficient flow rate in the heat exchanger for more than **25 seconds**.

Action

Case 1 :
The unit only handles **ONE pump**

- Immediate shut down of compressors and pump k.
- Fault signal 001 is shown on the display.
- The remote fault signal is delayed by 6 minutes

Case 2 :
The unit handles **TWO pumps** and the "Normal/ Safety" mode or "Clock" has been activated.

- Immediate shut down of pump k.
- Start up of the 2nd pump (refer to "EVAPORATOR PUMP(S) CONTROL" section for more details)
- If the FSE is detecting a flow rate, then the fault 040 is shown on the display, the unit is then running normally
- If the FSE does not detect any flow rate the fault 040 is shown on the display, the unit is then shut down
- The remote fault signal is delayed by 6 minutes

Reset

In all cases implying a shut down of the unit, 3 start up attempts are made then after these three faults per day the unit can only be restarted by a manual reset

Notes:

Fault counter is cleared and **reset every day at 10 am**, as long as the maximum number of faults has not been reached.

Possible causes	Solving the problem
Problem in the pump control wiring.	Check the pump connections
Problem with flow switch wiring.	Check the flow switch connection
Dirty water filter	Clean the water filter
Wrong setting of the flow switch	Adjust the setting of the flow switch

FAN(S) CIRCUIT BREAKER(S) OPEN

Fault Code: **90, 92, 93, 94, 95**

Description

One or more thermal magnetic trip circuit breaker protecting the condenser fans are tripped

Ecologic unit → Fault code 90
Ecomax unit circuit 1 → code 92
Ecomax unit circuit 2 → code 93
Ecomax unit circuit 3 → code 94
Ecomax unit circuit 4 → code 95

Reset

The fault is cleared automatically as soon as the fans circuit breakers are closed

Possible causes	Solving the problem
Wrong wiring or tightening of the connections.	Control all connections
Wrong setting on the circuit breaker	Set circuit breaker according with compressor normal running current

PUMP(S) CIRCUIT BREAKER(S) OPEN

Fault Code: **041, 042**

Description

The thermal magnetic trip circuit breaker protecting the pump k has tripped

Action

Case 1 :
The unit only handles **ONE pump**

- ☞ Immediate shut down of pump k.
- ☞ Immediate shut down of the unit.
- ☞ Fault signal shown on the display.
- ☞ The remote fault signal is delayed by 6 minutes

Case 2 : The unit handles **TWO pumps**.

- ☞ Immediate shut down of pump k.
- ☞ Start up of the 2nd pump (refer to "EVAPORATOR PUMP(S) CONTROL" section for more details)
- ☞ Fault signal **041** is shown on the display for Pump 1 and **042** for Pump 2
- ☞ The remote fault signal is delayed by 6 minutes

Reset

The fault **is automatically** reset as soon as the pump circuit breaker is closed.
If the unit was stopped (case 1), the unit will restart automatically **20 seconds** after the fault signal has disappeared and the climatic 50 has restarted the pump.

Possible causes	Solving the problem
Wrong wiring or tightening of the connections.	Control all connections
Wrong setting on the circuit breaker	Set circuit breaker according with compressor normal running current

Ecologic 'WA'

BM50 – Base Board

Digital Input	Digital Output	Analogic Input	Analogic Output
-J5.ID1: C1 – Comp. –Fault	-J12.NO1: C1 – Compressor 1	-J2.B1: C1 – HP (4~20ma -1~29b)	-J4.Y1: C1 – Ventilation 2, 3, 4 -J4.Y1: C1 – Ventilation 1, 2, 3 if two speed
-J5.ID2: C1 – HP	-J12.NO2: C1 – Compressor 2 -J12.NO2: C1 – MCC/MCW Valve Cp1	-J2.B2: C1 – BP (4~20ma -1~6b) *	-J4.Y2: C2 – Ventilation 2, 3, 4 -J4.Y2: C2 – Ventilation 1, 2, 3 if two speed
-J5.ID3: C1/C2 – Ventil. –Fault	-J12.NO3: C1 – WA Compressor 3 -J12.NO3: C1 – MCC/ If two speed, fan 3	-J2.B3: C2 – HP (4~20ma -1~29b)	-J4.Y3: C1 – Ventilation 1 – PWM
-J5.ID4: C2 – Comp. –Fault	-J13.NO4: C2 – Compressor 1	-J2.B4: C2 – BP (4~20ma -1~6b) *	-J4.Y4: C2- Ventilation 1 – PWM
-J5.ID5: C2 – HP	-J13.NO5: C2 – WA Compressor 2 -J13.NO5: C2 - MCC/MCW Valve Cp1	-J3.B5: Water – Outlet (NTC)	
-J5.ID6: Water – Flow	-J13.NO6: C2 – Compressor 3 -J13.NO6: C2 - MCC/ If two speed, fan 3	-J3.B6: Water – Inlet (NTC)	
-J5.ID7: ON/OFF / Remote Control	-J14.NO7: Water – Pump 1	-J6.B7: MCW Water T cond Outlet	
-J5.ID8: Reset / Remote Control	-J15.NO8: C1 – Ventilation 1 -J15.NO8: C1 – Ventilation 1 – High.Speed -J15.NC8: C1 – Ventilation 1 – Low.Speed	-J6.B8: Outdoor Air (NTC)	
-J7.ID9: Safety Elec Pump 1&2	-J16.NO9: C1 – Bypass Valve -J16.NO9: C1 – 4 Way Valve		
-J7.ID10: Step 1 (RA)	-J16.NO10: C2 – Bypass Valve -J16.NO10: C2 – 4 Way Valve	** If No Electronic Exp Valve*	
-J7.ID11: Step 2 (RA)	-J16.NO11: Water – Pump 2		
-J7.ID12: Step 3 (RA)	-J17.NO12: C2 – Ventilation 1 -J17.NO12: C2 – Ventilation 1–High.Speed -J17.NC12: C2 – Ventilation 1–Low.Speed		
-J8.ID13: Step 4 (RA)	-J18.NO13: General Alarm		
-J8.ID14: Step 5 (RA)			

BE50 – Extension Board

-J4.ID1: Energy recovery Unit or Custom 1	-J5.NO1: MCC C1 - Fan 2 -J5.NO1: MCC C1 – Fan 1 if two speeds -J5.NO1: free cooling -J5.NO1: Custom BE50.1	-J9.B1: WAH C1 - Discharge T° Comp1 (NTC150°C) -J9.B1: WA - Energy recovery Inlet (NTC) -J9.B1: Custom BE50.1	-J2.Y1: Free cooling
-J4.ID2: Custom 2 – BE50.1	-J6.NO2: MCC C1 - Fan 3 -J6.NO2: MCC C1 – Fan 2 if two speeds -J6.NO2: Custom BE50.2	-J9.B2: WAH C1 - Discharge T° Comp2 (NTC150°C) -J9.B2: WA - Energy recovery Onlet (NTC) -J9.B2: Custom BE50.2	
-J4.ID3: Custom 3 – BE50.2	-J7.NO3: MCC C2 - Fan 2 -J7.NO3: MCC C2 – Fan 1 if two speeds -J7.NO3: Custom BE50.3	-J10.B3: WAH C2 - Discharge T° Comp1 (NTC150°C) -J10.B3: Custom BE50.3	
-J4.ID4: Custom 4 – BE50.3 or stater	-J8.NO4: Starter -J8.NO4: MCC C2 - Fan 3 -J8.NO4: MCC C2 – Fan 2 if two speeds -J8.NO4: Custom BE50.4	-J10.B4: WAH C2 - Discharge T° Comp2 (NTC150°C) -J10.B4: Custom BE50.4	

Ecomax 'LC'

BM50 – Master Board

Digital Input	Digital Output	Analogic Input	Analogic Output
-J5.ID1: C1 – Comp. –Fault	-J12.NO1: C1 – (Screw) Reset Int. Comp. -J12.NO1: C1 – (Piston) 1st Valve Comp., 1 -J12.NO1: C1 – (322) 2nd Valve Comp., 1	-J2.B1: C1 – HP (4~20ma -1~29b)	-J4.Y1: C1 – Ventilation 2, 3, 4, 5 -J4.Y1: C1 – Ventilation 1, 2, 3, 4 if two speed
-J5.ID2: C1 – HP	-J12.NO2: C1 – (Screw) Valve 50% Comp -J12.NO2: C1 – (Piston) Comp., 2	-J2.B2: C1 – BP (4~20ma -1~6b) *	-J4.Y2: C2 – Ventilation 2, 3, 4, 5 -J4.Y2: C2 – Ventilation 1, 2, 3, 4 if two speed
-J5.ID3: C1 – Ventil. –Fault	-J12.NO3: C1 – (Screw) Valve 75% Comp. -J12.NO3: C1 – (Piston) 1st Valve Comp., 2 -J12.NO3: C1 – (322) 1st Valve Comp., 1	-J2.B3: C2 – HP (4~20ma -1~29b)	-J4.Y3: C1 – Ventilation 1 – PWM
-J5.ID4: C2 – Comp. –Fault	-J13.NO4: C2 – (Screw) Reset Int. Comp. -J13.NO4: C2 – (Piston) 1st Valve Comp., 1 -J13.NO4: C2 – (322) 2nd Valve Comp., 1	-J2.B4: C2 – BP (4~20ma -1~6b) *	-J4.Y4: C2- Ventilation 1 – PWM
-J5.ID5: C2 – HP	-J13.NO5: C2 – (Screw) Valve 50% Comp -J13.NO5: C2 – (Piston) Comp., 2	-J3.B5: Water – Outlet (NTC)	
-J5.ID6: C2 – Ventil. –Fault	-J13.NO6: C2 – (Screw) Valve 75% Comp. -J13.NO6: C2 – (Piston) 1st Valve Comp., 2 -J13.NO6: C2 – (322) 1st Valve Comp., 1	-J3.B6: Water – Inlet (NTC)	
-J5.ID7: ON/OFF / Remote Control	-J14.NO7: C1 - (Screw) Comp. -J14.NO7: C1 - (Piston) Comp., 1	-J6.B7: LCW Water T cond Outlet	
-J5.ID8: Reset / Remote Control	-J15.NO8: C1 – Ventilation 1 -J15.NO8: C1 – Ventilation 1 – High.Speed -J15.NC8: C1 – Ventilation 1 – Low.Speed	-J6.B8: Outdoor Air (NTC)	
-J7.ID9: Water – Flow	-J16.NO9: C1 – Liquid Valve		
-J7.ID10:	-J16.NO10: C2 – Liquid Valve		
-J7.ID11:	-J16.NO11: C2 – (Screw) Comp. -J16.NO11: C2 – (Piston) Comp., 2		
-J7.ID12:	-J17.NO12: C2 – Ventilation 1 -J17.NO12: C2 – Ventilation 1–High.Speed -J17.NC12: C2 – Ventilation 1–L.Speed		
-J8.ID13:	-J18.NO13: General Alarm		
-J8.ID14:			

** If No Electronic Exp Valve*

BM50 – Slave Board

Digital Input	Digital Output	Analogic Input	Analogic Output
-J5.ID1: C3 – Comp. –Fault	-J12.NO1: C3 – (Screw) Reset Int. Comp.	-J2.B1: C3 – HP (4~20ma -1~29b)	-J4.Y1: C3 – Ventilation 2, 3, 4, 5 -J4.Y1: C3 – Ventilation 1, 2, 3, 4 if two speed
-J5.ID2: C3 – HP	-J12.NO2: C3 – (Screw) Valve 50% Comp	-J2.B2: C3 – BP (4~20ma -1~6b) *	-J4.Y2: C4 – Ventilation 2, 3, 4, 5 -J4.Y2: C4 – Ventilation 1, 2, 3, 4 if two speed
-J5.ID3: C3 – Ventil. –Fault	-J12.NO3: C3 – (Screw) Valve 75% Comp.	-J2.B3: C4 – HP (4~20ma -1~29b)	-J4.Y3: C3 – Ventilation 1 – PWM
-J5.ID4: C4 – Comp. –Fault	-J13.NO4: C4 – (Screw) Reset Int. Comp.	-J2.B4: C4 – BP (4~20ma -1~6b) *	-J4.Y4: C4- Ventilation 1 – PWM
-J5.ID5: C4 – HP	-J13.NO5: C4 – (Screw) Valve 50% Comp		
-J5.ID6: C4 – Ventil. –Fault	-J13.NO6: C4 – (Screw) Valve 75% Comp.		
-J5.ID7:	-J14.NO7: C3 - (Screw) Comp.		
-J5.ID8:	-J15.NO8: C3 – Ventilation 1 -J15.NO8: C3 – Ventilation 1 – High.Speed -J15.NC8: C3 – Ventilation 1 – Low.Speed		
-J7.ID9:	-J16.NO9: C3 – Liquid Valve		
-J7.ID10:	-J16.NO10: C4 – Liquid Valve	** If No Electronic Exp Valve*	
-J7.ID11:	-J16.NO11: C4 – (Screw) Comp.		
-J7.ID12:	-J17.NO12: C4 – Ventilation 1 -J17.NO12: C4 – Ventilation 1–High.Speed -J17.NC12: C4 – Ventilation 1–Low.Speed		
-J8.ID13:	-J18.NO13: General Alarm		
-J8.ID14:			

BE50 – Extension Board

-J4.ID1: Safety Elec Pump 1&2 -J4.ID1: Custom 1 – BE50.1	-J5.NO1: Water - Pump, 1 -J5.NO1: Custom 1 – BE50.1	-J9.B1: Custom BE50.1	-J2.Y1:
-J4.ID2: Energy recovery Unit -J4.ID2: Custom 2 – BE50.2	-J6.NO2: Water - Pump, 2 -J6.NO2: Custom 2 – BE50.2	-J9.B2: Custom BE50.2	
-J4.ID3: Custom 3 – BE50.3	-J7.NO3: Custom BE50.3	-J10.B3: Custom BE50.3	
-J4.ID4: Custom 4 – BE50.4	-J8.NO4: Custom BE50.4	-J10.B4: Custom BE50.4	

Display Connections and Dip Switches Configuration

See page 4 : "Connection diagram : CLIMATIC™ 50 controller – option DC50 remote connection"

DC50 COMFORT DISPLAY

This display is mounted on the panel of the unit and can be also used as a remote controller; this display is designed for non-technician user. This display gives information such as flow or pump status, set point and outside air temperature. It does not allow access to detailed operating data.
It can be used to set or change the scheduling of the different time zones, the temperature set point for each zone.
It also has the capacity to set a 3 hours override and to force the unoccupied mode or any of the different time zones for a period of up to 7 days. It displays the real time clock and different faults signals.

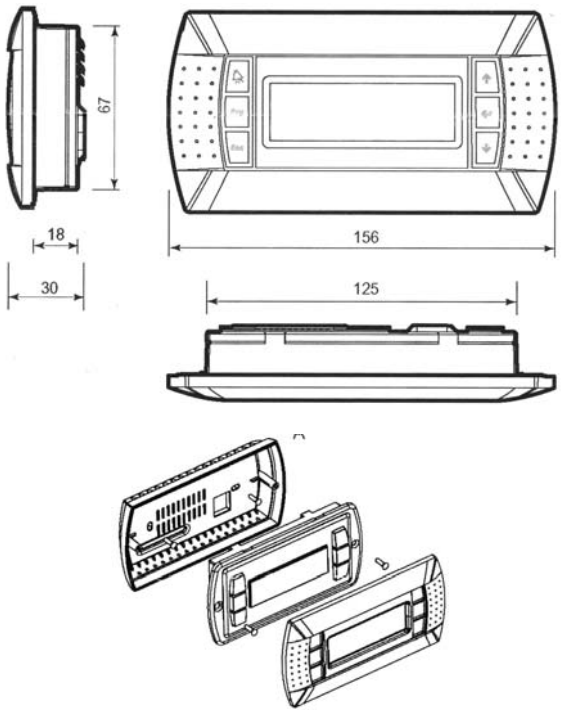
Display

Type FSTN graphic
Back light: Green LEDs
Resolution 120x32 pixels
Power Supply
Voltage from main Climatic board
Max power: 0.8W

Remote Installation

The optional DC50 is designed to be mounted on the wall.

- Fit the cable from the DT50 board through the back piece
- Fasten the back piece to the wall using the rounded head screws supplied in the packaging
- Connect the cable from the main board on the **RJ12** plug on the back of the DC50 display
- Fasten the front panel on the back piece using the flush head screws supplied
- Finally fit the click-on frame



Terminal connection board installation guide DT 50

The board is fitted with three "telephone" RJ12 plugs. Ensure the board is correctly connected.
Standard connection is:

- Climatic on connector C
- Unit DC50 on connector A
- Remote DC50 on connector SC
- DS50 on connector B

Jumpers:

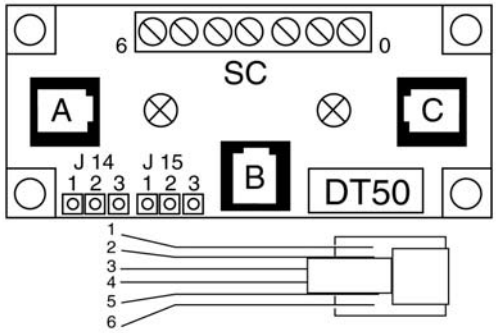
"Displays" are supplied directly by the Climatic board with 30Vdc. Take particular care at the path this 30V is taking when several boards are being used.

J14 and J15 can switch on or off the direct current from the power supply:

J14 and J15 set between1-2
Connectors A, B, C and screw connector SC are in parallel. Power supply available to all connectors.

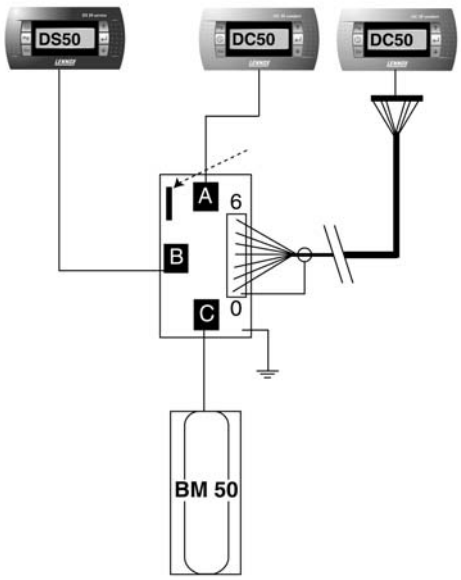
J14 and J15 set between2-3
Connectors B and C are in parallel but line 1 and 6 don't reach connector A and screw connector SC.
"Displays" connected to these ports will not be powered.
If J14 and J15 are set in different positions the "terminal connection board" DT50 DOES NOT WORK.

NOTE:
When a shielded wire is used the metallic case of the "Terminal connection box" DT50 must be earthed.



RJ12 PIN connection

SC Terminals	RJ12 Pin conn	Description
0	+	shield / earth
1	1	+VRL=30V
2	2	GND
3	3	Rx- / Tx-
4	4	Rx+ / Tx+
5	5	GND
6	6	+VRL=30V



Terminal display address configuration

The address of the terminal must be checked after having powered the board.

- To access the configuration mode, press ↑↓↵ together and hold them for at least 5 seconds.
- The screen shown below will be displayed with the cursor flashing in the top left hand corner.
- To change the address of the terminal display press the ↵ key once.
- Use the ↑↓ keys to select the desired value and confirm by pressing ↵.

- If the address was changed it will display the below screen.

!

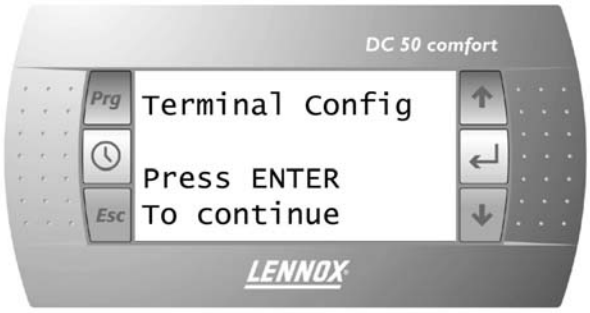
Assigning Terminal displays to control boards.

- Access the configuration mode by pressing ↑↓↵for at least 5 seconds.

NOTE: To access the board address menu you must go directly to the bottom of the first screen (shown in below screen) without changing the terminal address as explained above.

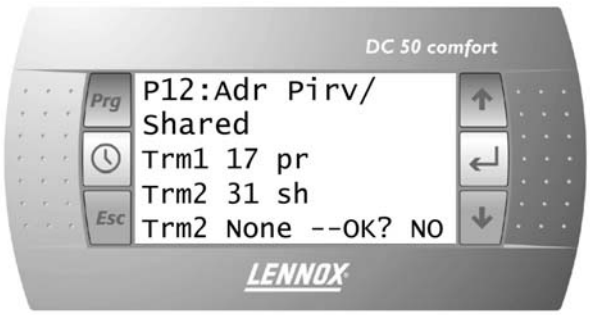
- Press the ↵ key until the cursor moves to the field "I/O Board address :XX" (below screen)
- Use the ↑↓key to select the correct Climatic board.(N° of Unit)

- Pressing ↵ again will display the screen shown below :

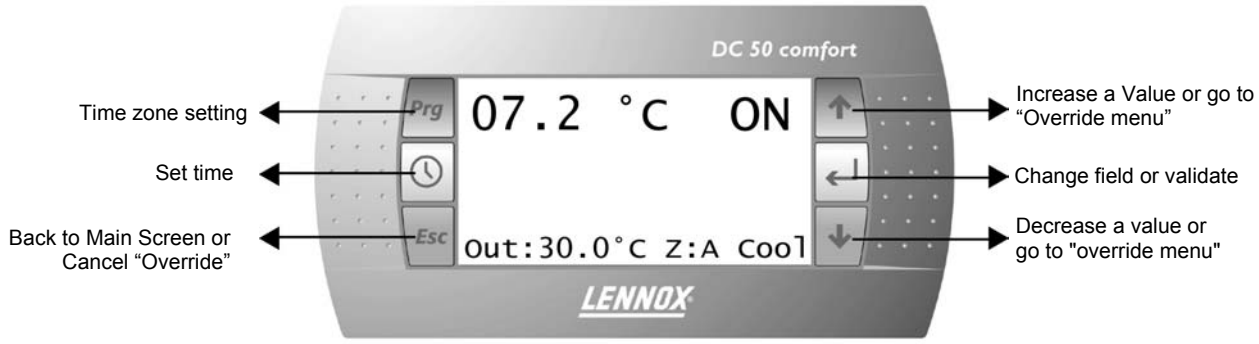


- Pressing ↵ again will display the screen shown below.
- The field "P:XX " shows the address of the selected board. In the example the value "12" has been selected.
- The filed under the "Adr" column represents the addresses of the terminal displays associated with the board that has the address "12", while the column under "Priv/Shared " indicate the type of terminal selected.
- Ph: Private
- Sh :Shared
- Sp : Shared Printer (N/A)
- To exit the configuration procedure and save the data, select the filed "OK?NO", choose "Yes" using the ↑↓ keys and confirm by pressing ↵ .

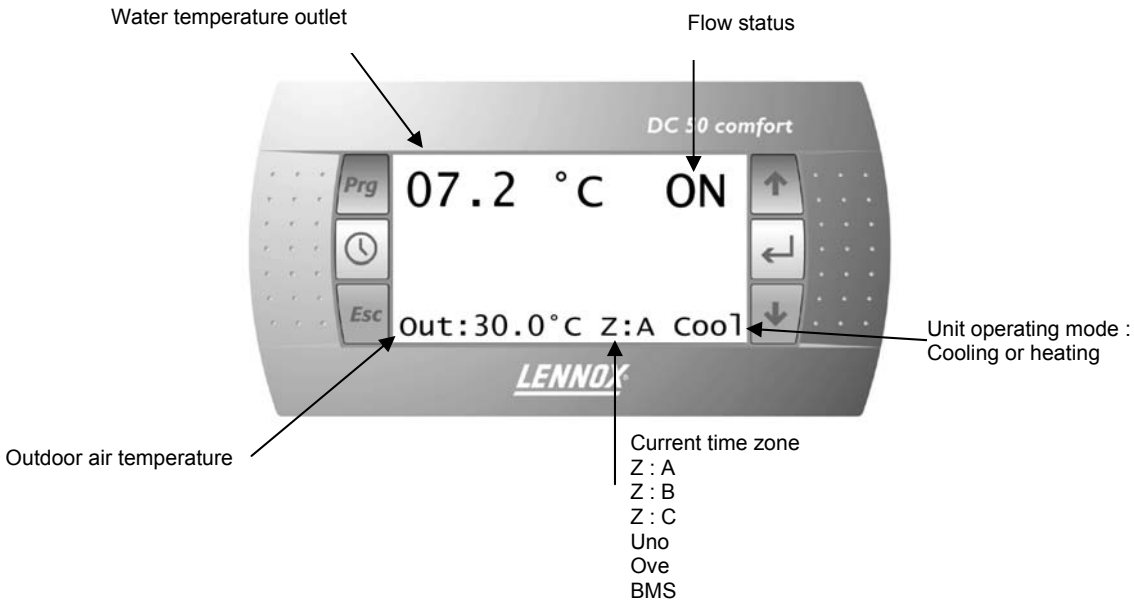
- If the terminal remains inactive (no button is pressed) for 30 seconds, the configuration procedure is aborted automatically.



Keys



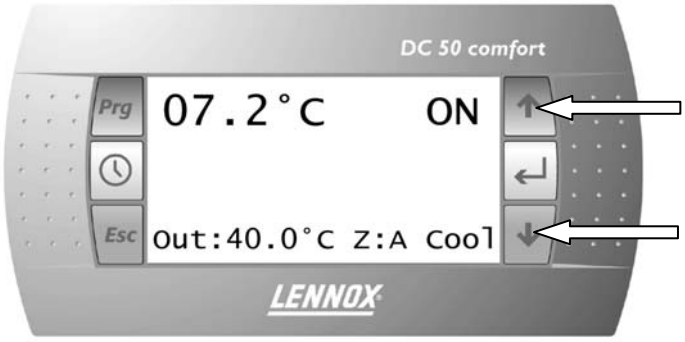
Main Screen



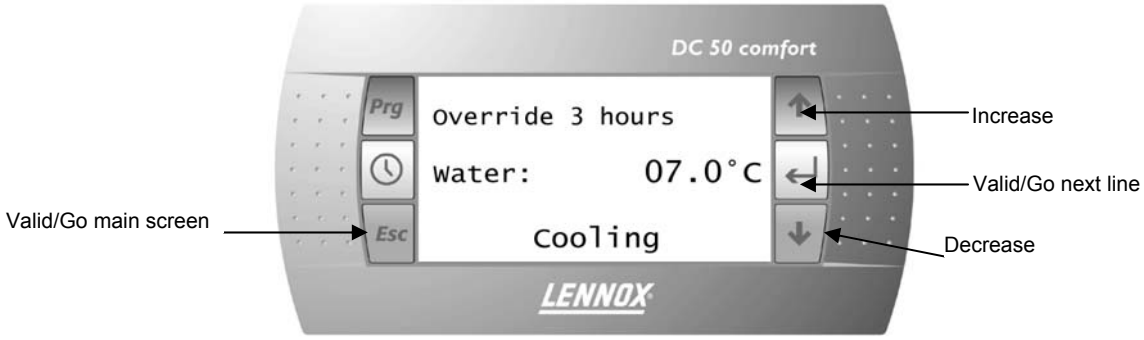
Override 3 hours

From main screen press any of the two arrow keys as shown bellow:

Main screen



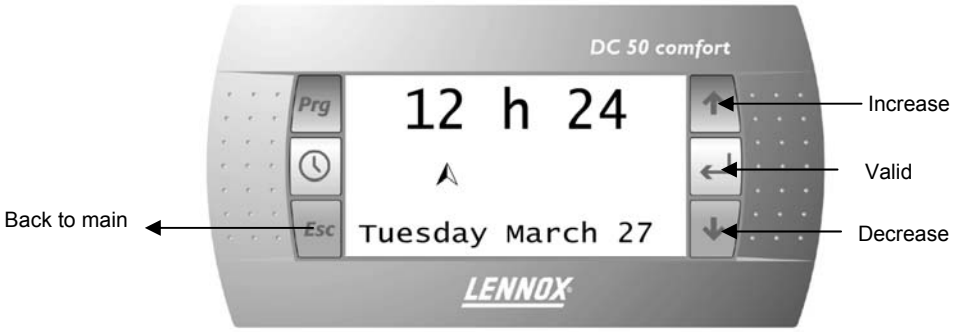
Override menu



It will revert back to main screen after 15 seconds, if no activity

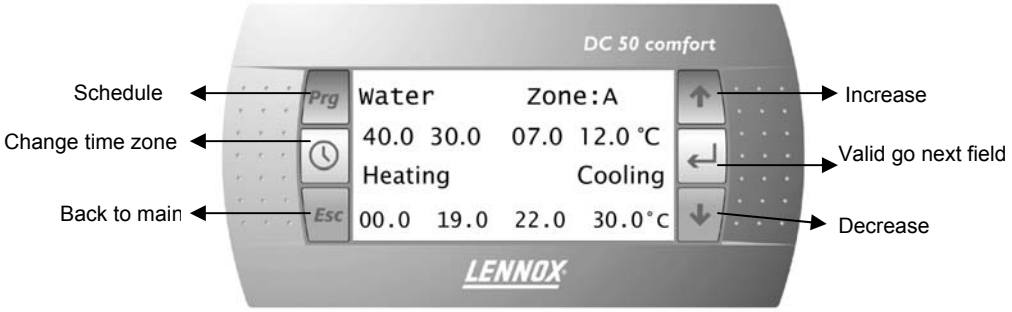
Clock Menu

From main screen press the clock key, the following menu appears:

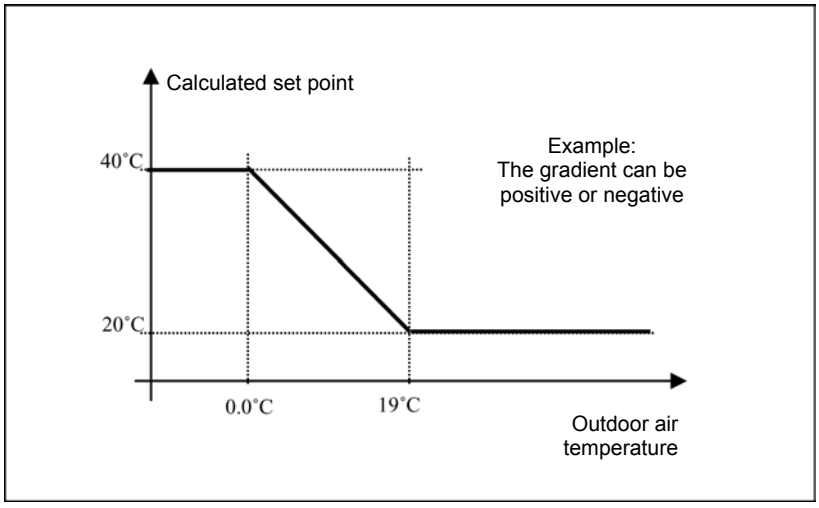


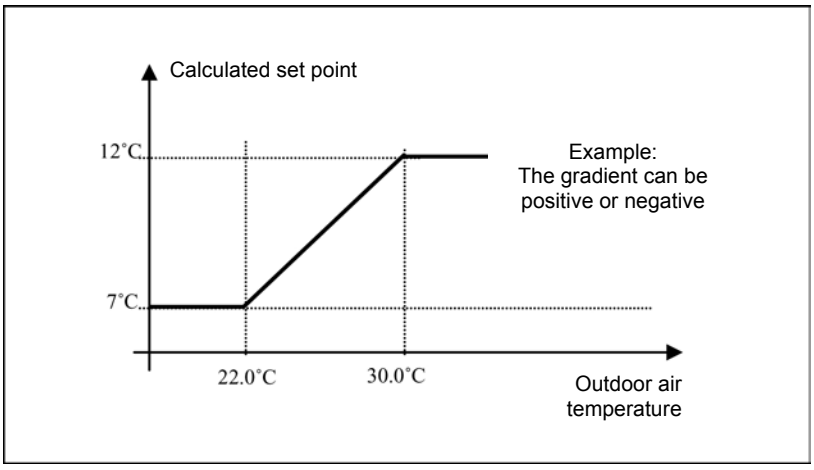
“Time Zone” Menu

From main screen press the “Prg” key, the following menu appears:



This page allows you to select the set point for cooling and heating for each time zone.

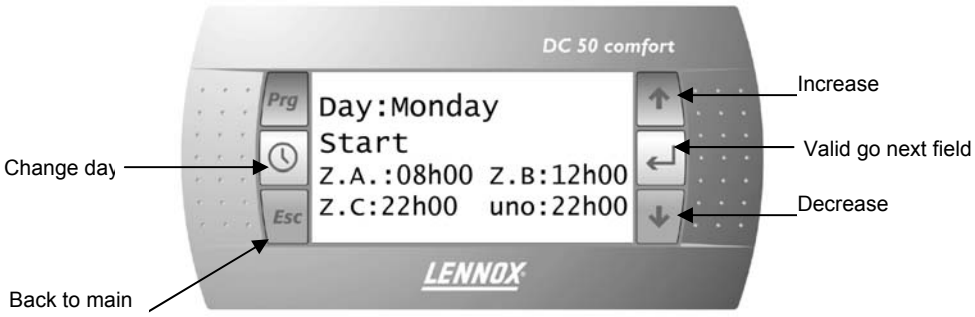




It will revert back to main screen after 15 seconds if no activity.

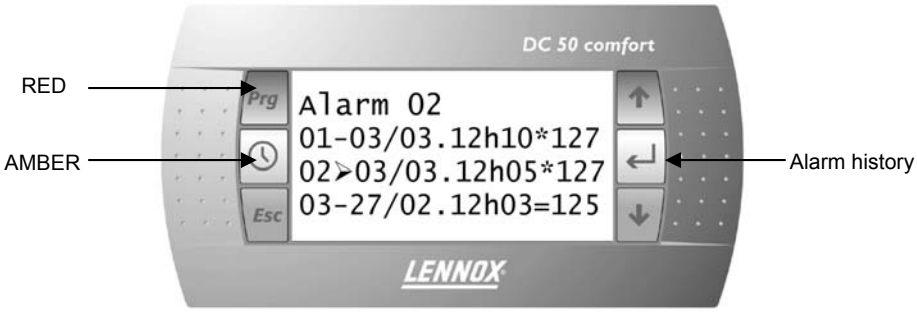
“Scheduling” Menu

The scheduling menu can be accessed from the “time zone” menu by pressing “Prg” again



Alarm screen

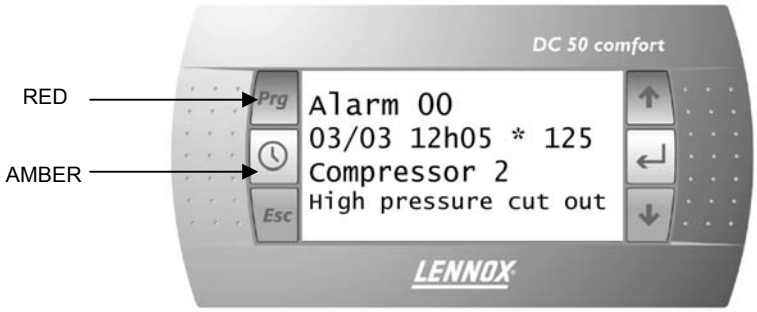
Alarm History Menu



You can scroll down this menu using the arrow keys and select one of the alarm messages by pressing the return key.

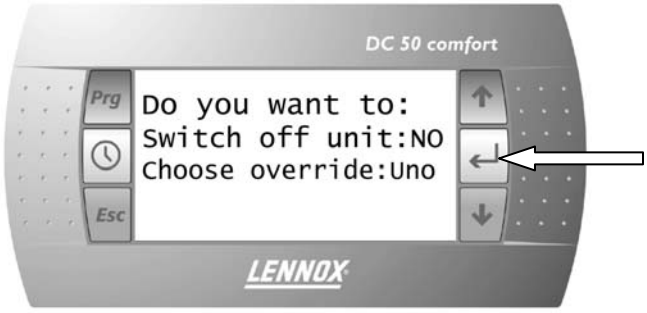
Alarm details

This menu allows you to view details on the selected fault as shown below:



Switching ON or OFF the unit or Forcing a selected time zones for a period of up to 7 days

Pressing the return key on the main screen will display the following message:



Pressing the return KEY validates the choice and move to the next field
Up and down arrows gives you the choice between different things

If you choose “YES” to the first question the unit is **SWITCHED OFF** and you can not access the override menu.

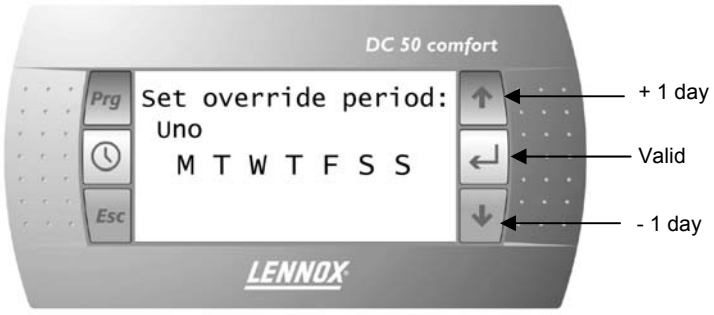
WARNING: Switching Off the unit disable all safety Protections

If you choose to stop the Unit in the previous screen the following screen will then appear**.**

The unit can then be switched back **ON** by pressing the return key once more.

If the first choose is “NO” then the override screen can be accessed a particular time zone can be forced for up to 7 days starting from the day “TODAY”.

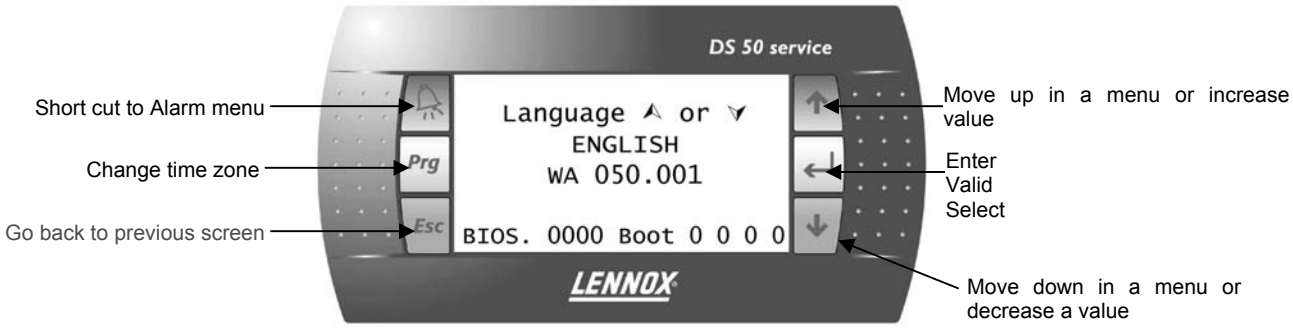
In this menu you can choose the number of days you want the selected time zone to override.
Increase the number of days by pressing the Up or down keys.



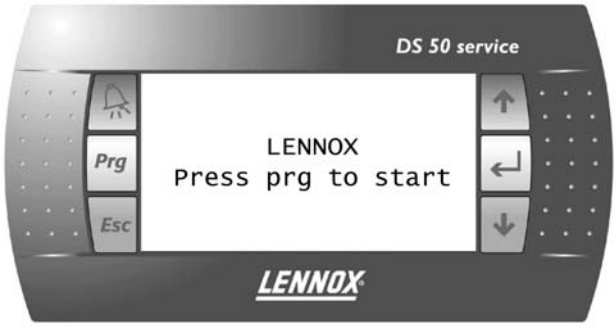
DS50 SERVICE DISPLAY

This display is usually is a plug and play feature designed for technician people.

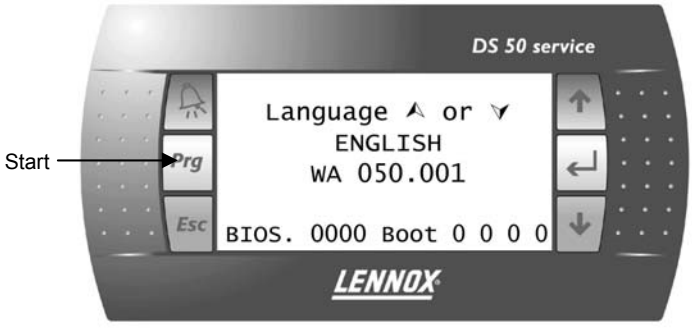
Keys



Start up screen or Screen (1)

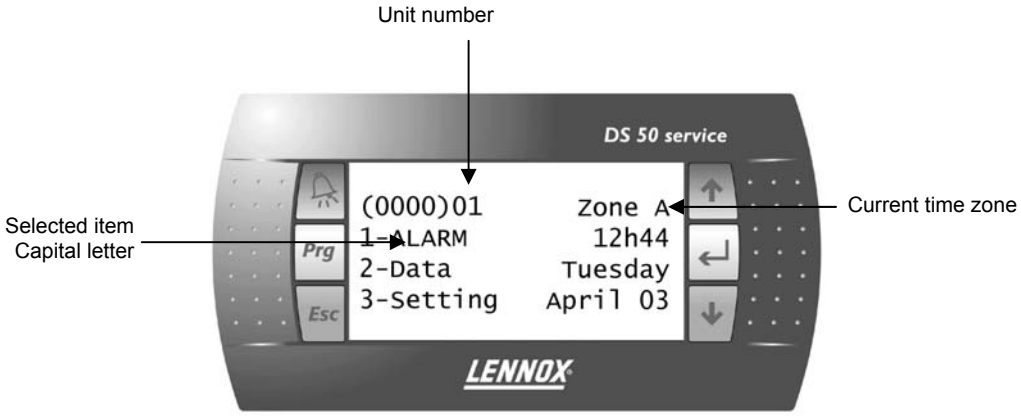


Screen (2) language selection



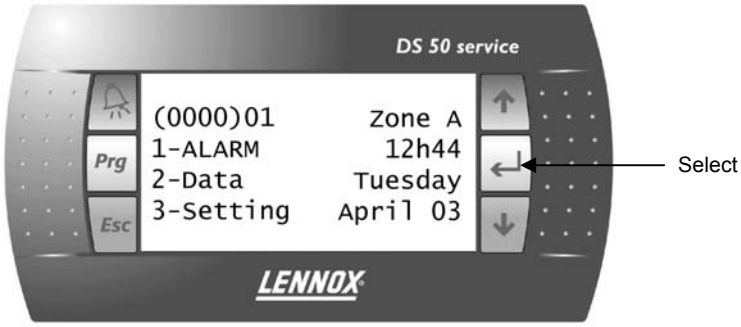
Ten languages are now available (DE, FR, GB, IT, NL, PL, PT, RO, SP, TR), but only two are downloaded in the factory. So, the required language must be specified at the time of order.
If needed, other language will be downloaded on site by Lennox technicians.
In this menu the specified language can be selected using the up and down keys. The “prg” key validates the choice and start the controller

Main menu (0000)

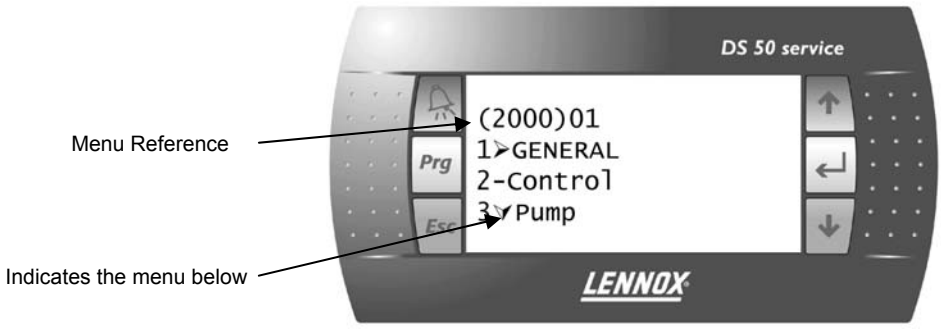


Moving down the menus

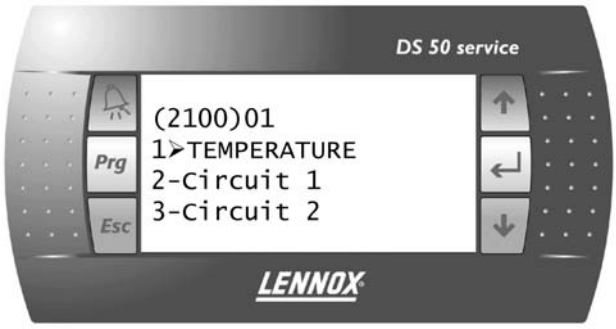
Pressing the arrow keys allows you to move up and down the menu tree. The selected item changes to CAPITAL letter. It can then be selected by pressing the “return” or “select” key



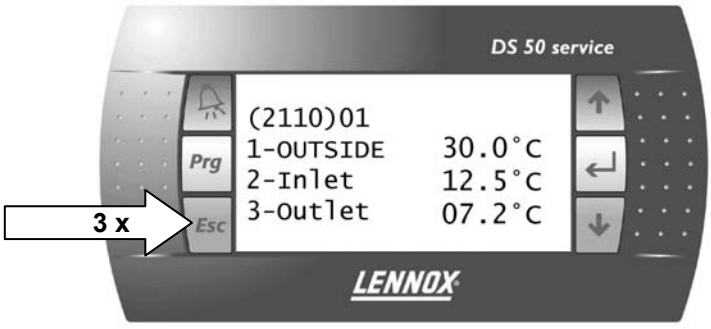
Sub-menu Data (2000)



If the menu “GENERAL” is selected, the controller then displays a second level sub-menu.

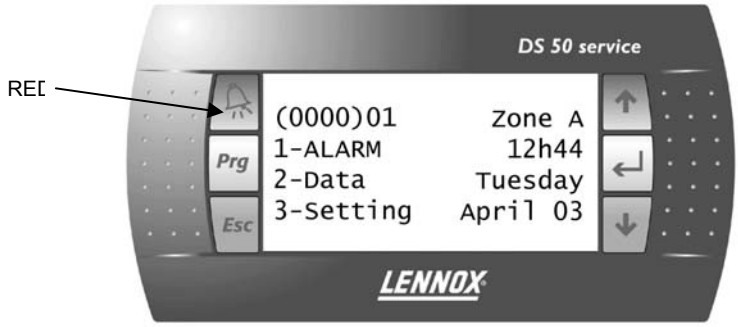


By selecting the item TEMPERATURE and pressing return, a third level page is displayed as shown bellow:

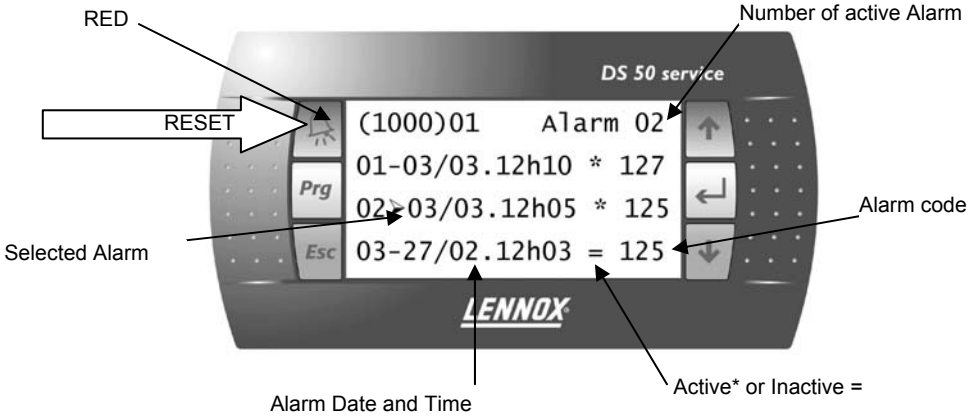


Pressing “**ESC**” at any time sends you back one level up the menu tree. In the example shown above “ESC” must be pressed 3 times to go back to the main menu (0000)
Pressing “ESC” will invalidate any changes made to a value in a setting page.

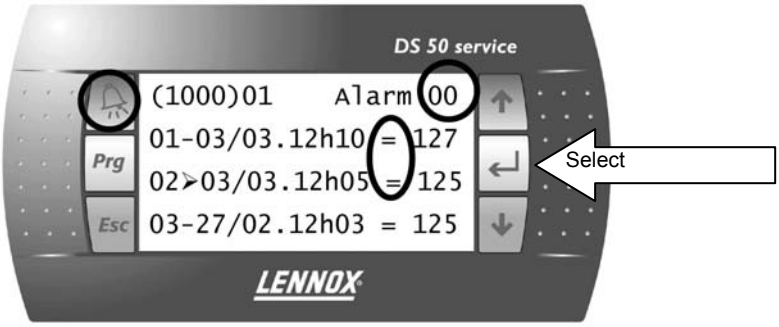
Alarms



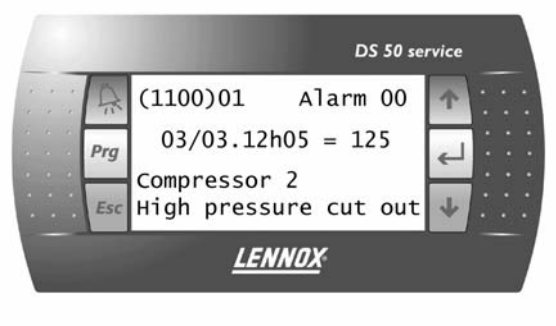
Select the alarm menu using the arrow keys and press return.
The faults history is then displayed in the page (1000):



Pressing the “ALARM” key resets all the alarms
The number of active alarms goes to 0, no active alarm shown in the menu, the “bell” key is switched off.

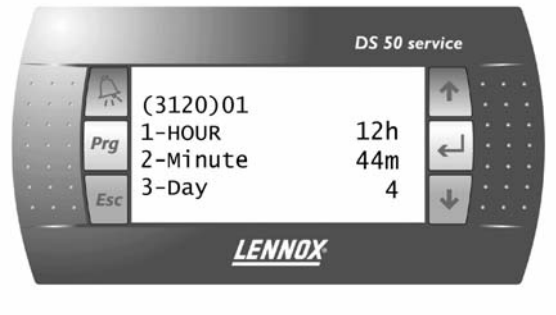


Pressing the “return” key will display details of the selected alarm

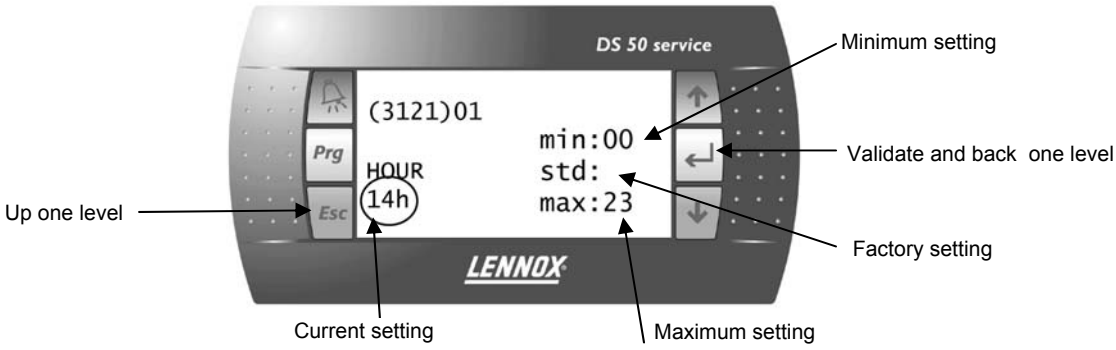


Clock settings

The clock setting menu can be accessed from the main menu by selecting the menu “SETTING” and then navigating down through the sub-menus until page (3120).

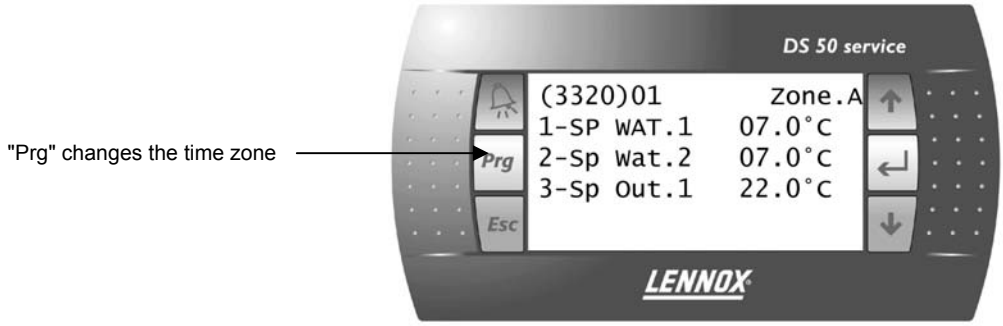


Selecting the HOUR for displays the page 3121 shown bellow:

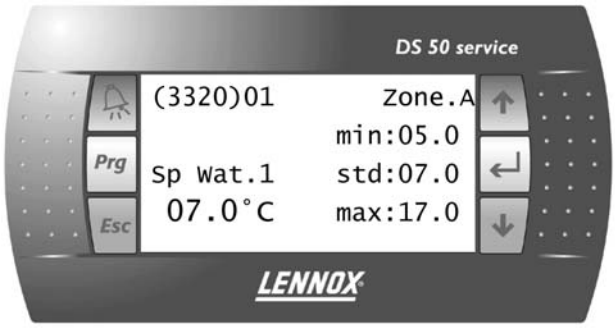


Zone Settings

From Main menu (0000) navigate down to sub-menu “SETTINGS”, zone settings (3320).



In this particular page, pressing the “prg” key, changes the time zone. If “SP WAT.1” is selected, this displays the Minimum Water Outlet Temperature Set Point for the specific time zone shown in the top corner.



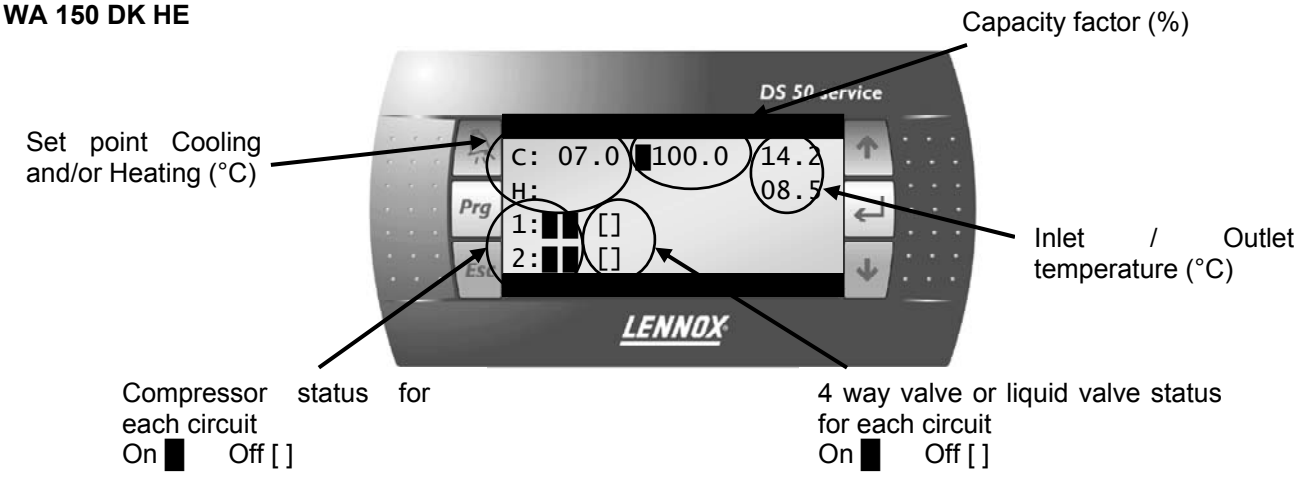
Pressing the “**prg**” validates any changes made, and moves to the next time zone. “ESC” does not validate the changes and move back one step in the menu tree.

Special screens for diagnostic

For unit operation diagnostic, it is helpful to use the special following screen which can be reached by pressing the Prg key while being on the screen 2400:

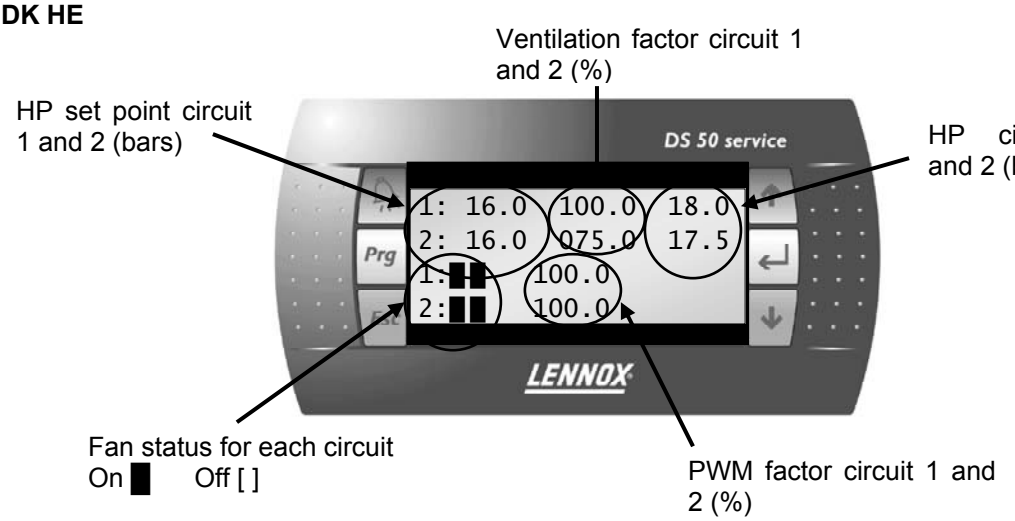
1. Main unit operation (water temperature vs set point , compressor operation, capacity factor)

WA 150 DK HE



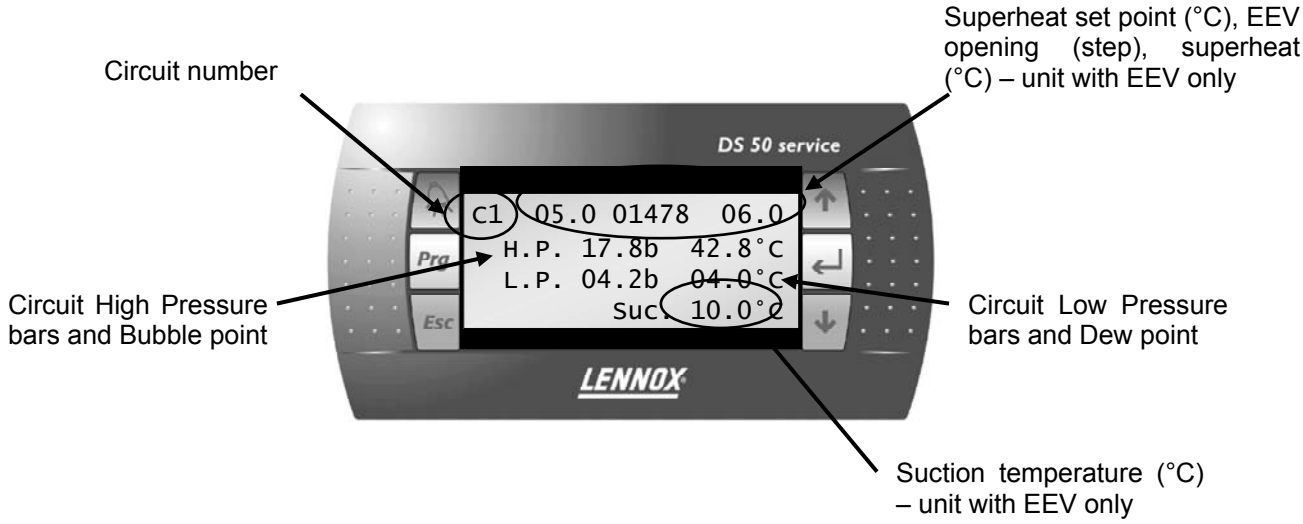
2. Fans operation (HP vs set point, fan operation, Ventilation factor)

WA 150 DK HE


Ventilation factor circuit 1 and 2 (%)
HP set point circuit 1 and 2 (bars)
HP circuit 1 and 2 (bars)
DS 50 service
1: 16.0 100.0 18.0
2: 16.0 075.0 17.5
1: 100.0
2: 100.0
Prg
Esc
LENNOX
Fan status for each circuit
On ■ Off [ ]
PWM factor circuit 1 and 2 (%)

3. Circuit 1 to 4 operation (HP, LP, superheat vs set point)

WA 150 DK HE

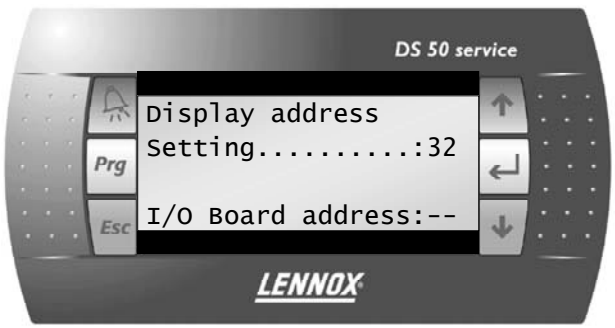

Circuit number
Superheat set point (°C), EEV opening (step), superheat (°C) – unit with EEV only
DS 50 service
C1 05.0 01478 06.0
H.P. 17.8b 42.8°C
L.P. 04.2b 04.0°C
Suc. 10.0°C
Prg
Esc
LENNOX
Circuit High Pressure bars and Bubble point
Circuit Low Pressure bars and Dew point
Suction temperature (°C) – unit with EEV only

BM 50 address configuration

It may be necessary to change BM50 addresses on the LAN network - mainly in case of Master / Slave installation. Follow the procedure hereunder to do so:

1. Change the DS50 address to 0

- Turn the power OFF/ON on the BM50, then access the configuration mode by pressing ↑↓↵for at least 5 seconds until you reach the following screen:

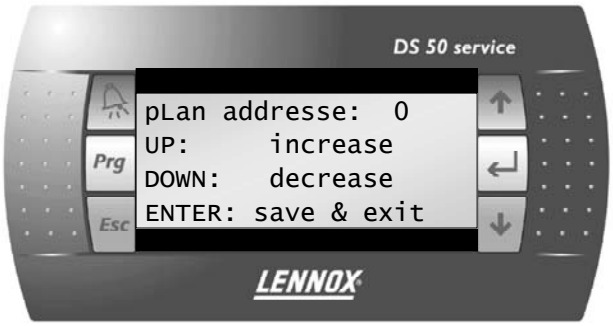


By using ↑ ↓ keys Change the Display addresses setting to 0 (instead of 32 as standard value) and validate with ↵ key.

2. Change the BM50 address

Shut off the power on the BM50 and then turn it on again after 5 seconds, then press alarm and ↑keys in order to get the following screen

Then you will get:



By using ↑ ↓ keys Change the pLan address to the correct value (1 to 4) and validate with ↵ key.

3. Change the DS50 address

Set back the DS 50 address to its normal address (32) with the relevant procedure.

DS50 MENU TREE – ECOLOGIC/ECOMAX RANGE

Main screen	Code	Description	Code	Description	Code	Description	Code	Unit
1-Alarm	1000	1-(date).(time)						
		2-(date).(time)						
		3-(date).(time)						
2-Data	2000	1-General	2100	1-Temperature	2110	1-Outside	2111	°C
						2-Inlet	2112	°C
						3-Outlet	2113	°C
						4-Wat/Cond	2114	°C
				2-Circuit 1	2120	1-SuperHeat	2121	°C
						2-T°. Condensing	2122	°C
						3-T°- Saturated	2123	°C
						4-T°. Suction	2124	°C
						5-P. Condensing	2125	b
						6-P. Saturated	2126	b
				3-Circuit 2	2130	1-SuperHeat	2131	°C
						2- T°.Condensing	2132	°C
						3- T°- Saturated.	2133	°C
						4- T°. Suction.	2134	°C
						5- P. Condensing	2135	b
						6- P. Saturated	2136	b
				4-Circuit 3	2140	1-SuperHeat	2141	°C
						2-T°. Condensing	2142	°C
						3-T°- Saturated	2143	°C
						4-T°. Suction	2144	°C
						5-P. Condensing	2145	b
						6-P. Saturated	2146	b
				5-Circuit 4	2150	1-SuperHeat	2151	°C
						2- T°.Condensing	2152	°C
						3- T°- Saturated.	2153	°C
						4- T°. Suction.	2154	°C
						5- P. Condensing	2155	b
						6- P. Saturated	2156	b
				6-Other	2160	1-Sw On/Off	2161	On/Off
						2-Sw Flow	2162	On/Off

Main screen	Code	Description	Code	Description	Code	Description	Code	Unit
						3-Sw Reset	2163	On/Off
						4-Sw Unoc.	2164	On/Off
						5-Sw Dis. C1	2165	On/Off
						6-Sw Dis. C2	2166	On/Off
						7- Sw Dis. C3	2167	On/Off
						8- Sw Dis. C4.	2168	On/Off
				7-Out. Custom.	2170	1-Relay 1	2171	On/Off
						2-Relay 2	2172	On/Off
						3-Relay 3	2173	On/Off
						4-Relay 4	2174	On/Off
				8-In. Custom.	2180	1-Switch 1	2181	On/Off
						2-Switch 2	2182	On/Off
						3-Switch 3	2183	On/Off
						4-Switch 4	2184	On/Off
				9-In. % Custom	2190	1-Temp. 1	2191	°C
						2-Temp. 2	2192	°C
						3-Temp. 3	2193	°C
						4-Temp. 4	2194	°C
		2-Control	2200	1-Water	2210	1-Sp Cool	2211	°C
						2-Sp Heat	2212	°C
						3-Cap.Cool	2213	%
						4-Cap.Heat	2214	%
						5-Sw 2°Sp	2215	On/Off
						6-Offset	2216	°C
				2-Ventilation	2220	1-SetPoint	2221	b
						2-Capa. V1	2222	%
						3-Capa. V2	2223	%
						4-Capa. V3	2224	%
						5-Capa. V4	2225	%
				3-Pump		1-Config.	2311	Liste: NO / Single / Double
						2-State	2312	Liste : Stopped / Started1 / Started2 / Schedule / Fault(1) / Fault(2)
						3-Sw Flow	2313	On/Off
						4-Sw State	2314	On/Off
						5-Relay 1	2315	On/Off
						6-Running T. 1	2316	h
						7-Relay 2	2317	On/Off

Main screen	Code	Description	Code	Description	Code	Description	Code	Unit
						8-Running T. 2	2318	h
		4-Compressor	2400	1-Comp.1 – C1	2410	1-Config.	2411	Liste : No / Cool.Only / H.Pump
						2-State	2412	Liste : Stopped / StartHeat / Started / Start.0.5 / Started1 / Defrost / Wait.Flow / Wait.CH / Ant-Sho-Cy / Schedule / Switch / Fault(1)
						3-Sw State	2413	On/Off
						4-Sw High P.	2414	On/Off
						5-Sw Low P.	2415	On/Off
						6-Relay	2416	On/Off
						7-H.Pump	2417	On/Off
						8-Valve	2418	On/Off
						9-Run Time	2419	h
				2-Comp.2 - C1	2420	1-Config.	2421	Liste : No / Cool.Only / H.Pump
						2-State	2422	Liste : Stopped / StartHeat / Started / Start.0.5 / Started1 / Defrost / Wait.Flow / Wait.CH / Ant-Sho-Cy / Schedule / Switch / Fault(1)
						3-Sw State	2423	On/Off
						4-Sw High P.	2424	On/Off
						5-Sw Low P.	2425	On/Off
						6-Relay	2426	On/Off
						7-H.Pump	2427	On/Off
						8-Valve	2428	On/Off
						9-Run Time	2429	h
				3- Comp.3 – C1 (Ecologic) Comp.1 – C2 (Ecomax)	2430	1-Config.	2431	Liste : No / Cool.Only / H.Pump
						2-State	2432	Liste : Stopped / StartHeat / Started / Start.0.5 / Started1 / Defrost / Wait.Flow / Wait.CH / Ant-Sho-Cy / Schedule / Switch / Fault(1)
						3-Sw State	2433	On/Off
						4-Sw High P.	2434	On/Off
						5-Sw Low P.	2435	On/Off
						6-Relay	2436	On/Off
						7-H.Pump	2437	On/Off
						8-Valve	2438	On/Off
						9-Run Time	2439	h
				4- Comp. 1 – C2 (Ecologic) Comp.2 – C2 (Ecomax)	2440	1-Config.	2441	Liste : No / Cool.Only / H.Pump
						2-State	2442	Liste : Stopped / StartHeat / Started / Start.0.5 / Started1 / Defrost / Wait.Flow / Wait.CH / Ant-Sho-Cy / Schedule / Switch / Fault(1)
						3-Sw State	2443	On/Off

Main screen	Code	Description	Code	Description	Code	Description	Code	Unit
						4-Sw High P.	2444	On/Off
						5-Sw Low P.	2445	On/Off
						6-Relay	2446	On/Off
						7-H.Pump	2447	On/Off
						8-Valve	2448	On/Off
						9-Run Time	2449	H
				5- Comp. 2 – C2 (Ecologic) Comp.1 – C3 (Ecomax)	2450	1-Config.	2451	Liste : No / Cool.Only / H.Pump
						2-State	2452	Liste : Stopped / StartHeat / Started / Start.0.5 / Started1 / Defrost / Wait.Flow / Wait.CH / Ant-Sho-Cy / Schedule / Switch / Fault(1)
						3-Sw State	2453	On/Off
						4-Sw High P.	2454	On/Off
						5-Sw Low P.	2455	On/Off
						6-Relay	2456	On/Off
						7-H.Pump	2457	On/Off
						8-Valve	2458	On/Off
						9-Run Time	2459	H
				5- Comp. 3 – C2 (Ecologic) Comp.1 – C4 (Ecomax)	2460	1-Config.	2461	Liste : No / Cool.Only / H.Pump
						2-State	2462	Liste : Stopped / StartHeat / Started / Start.0.5 / Started1 / Defrost / Wait.Flow / Wait.CH / Ant-Sho-Cy / Schedule / Switch / Fault(1)
						3-Sw State	2463	On/Off
						4-Sw High P.	2464	On/Off
						5-Sw Low P.	2465	On/Off
						6-Relay	2466	On/Off
						7-H.Pump	2457	On/Off
						8-Valve	2458	On/Off
						9-Run Time	2459	H
		5-EEV	2500	1-Circuit 1	2510	1-Config.	2511	Liste : No / Yes
						2-State	2512	Liste : Stopped / Started / Wait.Flow / Wait.CH / Schedule / Switch / Fault(1)
						3-Position	2513	~
				2-Circuit 2	2520	1-Config.	2521	Liste : No / Yes
						2-State	2522	Liste : Stopped / Started / Wait.Flow / Wait.CH / Schedule / Switch / Fault(1)
						3-Position	2523	~
				3-Circuit 3	2530	1-Config.	2531	Liste : No / Yes
						2-State	2532	Liste : Stopped / Started / Wait.Flow / Wait.CH / Schedule / Switch / Fault(1)

Main screen	Code	Description	Code	Description	Code	Description	Code	Unit
						3-Position	2533	~
				4-Circuit 4	2540	1-Config.	2541	Liste : No / Yes
						2-State	2542	Liste : Stopped / Started / Wait.Flow / Wait.CH / Schedule / Switch / Fault(1)
						3-Position	2543	~
		6-Ventilation	2600	1-Fan - Circuit 1	2610	1-Config.	2611	Liste : No / 1.Yes / 2.Yes / 3.Yes / 4.Yes / 5.Yes / 1.Modulat. / 2.Modulat. / 3.Modulat. / 4.Modulat. / 5.Modulat. / 1.LowSpeed / 2.LowSpeed / 3.LowSpeed / 4.LowSpeed / 5.LowSpeed
						2-State	2612	Liste : Stopped / Start.0.5 / Started1 / Start.1.5 / Started2 / Start.2.5 / Started3 / Start.3.5 / Started4 / Start.4.5 / Started5 / Wait.Flow / Wait.CH / Fault(1)
						3-Sw State	2613	On/Off
						4-Relay 1	2614	On/Off
						5-Relay 2.	2615	On/Off
						6-Relay 3	2616	On/Off
						7-Relay 4	2617	On/Off
						8-Relay 5	2618	On/Off
						9-Modulat.	2619	%
				1-Fan - Circuit 2	2620	1-Config.	2621	Liste : No / 1.Yes / 2.Yes / 3.Yes / 4.Yes / 5.Yes / 1.Modulat. / 2.Modulat. / 3.Modulat. / 4.Modulat. / 5.Modulat. / 1.LowSpeed / 2.LowSpeed / 3.LowSpeed / 4.LowSpeed / 5.LowSpeed
						2-State	2622	Liste : Stopped / Start.0.5 / Started1 / Start.1.5 / Started2 / Start.2.5 / Started3 / Start.3.5 / Started4 / Start.4.5 / Started5 / Wait.Flow / Wait.CH / Fault(1)
						3-Sw State	2623	On/Off
						4-Relay 1	2624	On/Off
						5-Relay 2.	2625	On/Off
						6-Relay 3	2626	On/Off
						7-Relay 4	2627	On/Off
						8-Relay 5	2628	On/Off
						9-Modulat.	2629	%
				2-Fan 2 - Circuit 3	2630	1-Config.	2631	Liste : No / 1.Yes / 2.Yes / 3.Yes / 4.Yes / 5.Yes / 1.Modulat. / 2.Modulat. / 3.Modulat. / 4.Modulat. / 5.Modulat. / 1.LowSpeed / 2.LowSpeed / 3.LowSpeed / 4.LowSpeed / 5.LowSpeed
						2-State	2632	Liste : Stopped / Start.0.5 / Started1 / Start.1.5 / Started2 / Start.2.5 / Started3 / Start.3.5 / Started4 / Start.4.5 / Started5 / Wait.Flow / Wait.CH / Fault(1)
						3-Sw State	2633	On/Off
						4-Relay 1	2634	On/Off
						5-Relay 2.	2635	On/Off
						6-Relay 3	2636	On/Off
						7-Relay 4	2637	On/Off
						8-Relay 5	2638	On/Off

Main screen	Code	Description	Code	Description	Code	Description	Code	Unit
						9-Modulat.	2639	%
				1-Fan - Circuit 4	2640	1-Config.	2641	Liste : No / 1.Yes / 2.Yes / 3.Yes / 4.Yes / 5.Yes / 1.Modulat. / 2.Modulat. / 3.Modulat. / 4.Modulat. / 5.Modulat. / 1.LowSpeed / 2.LowSpeed / 3.LowSpeed / 4.LowSpeed / 5.LowSpeed
						2-State	2642	Liste : Stopped / Start.0.5 / Started1 / Start.1.5 / Started2 / Start.2.5 / Started3 / Start.3.5 / Started4 / Start.4.5 / Started5 / Wait.Flow / Wait.CH / Fault(1)
						3-Sw State	2643	On/Off
						4-Relay 1	2644	On/Off
						5-Relay 2.	2645	On/Off
						6-Relay 3	2646	On/Off
						7-Relay 4	2647	On/Off
						8-Relay 5	2648	On/Off
						9-Modulat.	2649	%
		7-Option	2700	1-Free Cooling	2710	1- Config.	2711	Liste : No / Yes
						2- State	2712	Liste : Stopped / Started / Wait.Flow / Wait.CH
				2-Heat Recovery	2720	1-Config.	2721	Liste : No / Yes
						2- State	2722	Liste : Stopped / Started / Wait.Flow / Wait.CH
						3- Inlet	2723	°C
						4- Outlet	2724	°C
						5-Sw State	2725	On/Off

Main screen	Code	Description	Code	Description	Code	Description	Code	Unit	Min	Factory	Max	Comments
3-Setting	3000	1-General	3100	1-Order	3110	1-On/Off	3111	On/Off	~	Off	~	*[On / Off] Unit
						2-Pompe	3112	Liste : Started / Stopped / P1 Only / P2 Only / P1-N P2-R / P2-N P1-R / Clock	0	0	6	pump operation mode set up (see Pump operation description page 12 – IOM Climatic 50)
						3-Reset Al.	3113	Yes/No	~	Off	~	*[Reset] Discharges the safety measures of the unit
						4-Resume	3114	Yes/No	~	Off	~	*[Override] Cancel any override action set with the DC50
						5-Test	3115	Liste : . / Quickly / Defrost / 24/24 7/7	0	0	3	Lennox set point
				2-Clock	3120	1-Hour	3121	H	0	~	23	*[Clock] Clock setting "Hour"
						2-Minute	3122	m	0	~	59	*[Clock] Clock setting "minute''
						3-Day	3123	~	1	~	31	*[Clock] Clock setting "Day"
						4-Month	3124	~	1	~	12	*[Clock] Clock setting "Month"
						5-Year	3125	~	2	~	99	*[Clock] Clock setting "Year"
						6-Win/Sum	3126	Yes/No	~	Yes	~	*[Clock] automatic switch summer time / winter time
		2-Schedule	3200	1-Time	3210	1-Start Uno	3211	h	0	24	24	*[Zone Setting] Starting time "Hour" for "Unocupied" zone – set 6.3 to get 6h30mn – modulo 10mn
						2-Start z.A	3212	h	0	0	24	*[Zone Setting] Starting time for "Zone A" – set 6.3 to get 6h30mn – modulo 10mn
						3-Start z.B	3213	h	0	24	24	*[Zone Setting] Starting time for "Zone B" – set 6.3 to get 6h30mn – modulo 10mn
						4-Start z.C	3214	h	0	24	24	*[Zone Setting] Starting time for "Zone C" – set 6.3 to get 6h30mn – modulo 10mn
				2-Anticipation	3220	1-Foot	3221	°C	-10	10	20	*[Anticipation Function] Bottom of the slope in °C. Limit of activation of the function. This allows an anticipated startup in the morning depending on the outdoor temperature. Only for the "Zone-A"
						2-Gradient	3222	mn/°C	0	0	100	*[Anticipation Function] Slope in "Minutes of anticipation per degrees".
		3-Control	3300	1-Change over	3310	1-Mode	3311	Liste : Cool. Only / Heat. Only / Auto. / Auto.Stop.	0	0	3	*[Change over] Change over mode for heat pump units, 0: chiller only, 1: HP only, 2: automatic with pump, 3:automatic without pump operation.
						2-Winter	3312	°C	-10	19	50	*[Change over] Change over winter setting
						3-Summer	3313	°C	-10	22	50	*[Change over] Change over summer setting
				2 -Water Cool		1-Sp Wat.1	3321	°C	5 / *-10*	7	17	*[Water SP] Outlet chilled water temperature set point (see page 14 – IOM Climatic 50) – *minimum with Glycol according to %*

Main screen	Code	Description	Code	Description	Code	Description	Code	Unit	Min	Factory	Max	Comments
						2-Sp Wat.2	3322	°C	5 / *-10*	7	17	*[Water SP] Outlet chilled water temperature set point (see page 11 – IOM Climatic 50) – *minimum with Glycol according to %*
						3-Sp Out.1	3323	°C	-10	22	50	*[Water SP] Ambiant air temperature set point (see page 13 – IOM Climatic 50)
						4-Sp Out.2	3324	°C	-10	30	50	*[Water SP] Ambiant air temperature set point (see page 13 – IOM Climatic 50)
						5-Reactiv.	3325	%/°C	1	5	50	*[Capacity Factor] Reactivity factor for cooling mode
				3-Water Heat	3330	1-Sp Wat.1	3331	°C	17	40	50	*[Water SP] Outlet hot water temperature set point (see page 13 – IOM Climatic 50)
						2-Sp Wat.2	3332	°C	17	40	50	*[Water SP] Outlet hot water temperature set point (see page 13 – IOM Climatic 50)
						3-Sp Out.1	3333	°C	-10	19	50	*[Water SP] Ambiant air temperature set point (see page 13 – IOM Climatic 50)
						4-Sp Out.2	3334	°C	-10	0	50	*[Water SP] Ambiant air temperature set point (see page 13 – IOM Climatic 50)
						5-Reactiv.	3335	%/°C	1	5	50	*[Capacity Factor] Reactivity factor for heating mode
				4-Safety	3340	1-Wat. Low	3341	°C	3 / *-10*	5 / *-10*	12	*[Safety limit] Chilled water outlet temperature limit – *minimum with Glycol according to %*
						2-Wat. high	3342	°C	22	53	53	*[Safety limit] Hot water outlet temperature limit
		4-Compressor	3400	1-Circuit	3410	1-Enable	3411	Liste : C1_ _ _ / C _2_ _ / C12_ _ / C _ _3_ / C1_3_ / C _23_ / C123_ / C _ _ _4 / C1_ _ 4 / C_2_4 / C12 _4 / C _ _34 / C1_34 / C_234 / C1234	1	3 / 15	3 / 15	*[Circ enable] Circuit operation management – Circuit authorize to operate
						2-Rotat.	3412	Liste : Auto. / C.1 / C.2 / C.3 / C.4	0	0	4	*[Comp priority] Circuit priority management
				2-Safety	3420	1-Frost	3421	°C	-1/*-20*	-1 / *-20*	5	*[Safety limit] Freezing safety limit – *minimum with Glycol according to %*
						2-Time limit	3422	s	1	30	360	*[Safety limit] Lennox setting
						3- T.Disch	3423	°C	90	110	120	*[Temp. SP] Discharge temperature set point WAH only
						4- W/Cd Mini	3424	°C	5	25	33	*[Safety limit] Condensing water outlet temperature limit
						5- W/Cd Maxi	3425	°C	20	55	66	*[Safety limit] Condensing water outlet temperature limit
				3-Defrost	3430	1-Mode	3431	Liste : Dynamic / Cyclic	0	0	2	*[Function Defrost] Choice of defrost: 1 = "cycling" or 0 ="dynamic"
						2-Outside	3432	°C	8	10	20	*[Function Defrost] Authorization of defrost - Threshold of outside temperature (in °c)
						3-Coil	3433	°C	1/-10	2	3 / 10	*[Function Defrost] Authorization of defrost - Threshold of coil temperature (in °c)

Main screen	Code	Description	Code	Description	Code	Description	Code	Unit	Min	Factory	Max	Comments
						4-Time Limit	3434	mn	1	30	360	*[Function Defrost] Time limit for icing (in minute) -For the dynamic defrost the unit will run this minimum amount of time. If cycling defrost this is the time delay to start the defrost once the temperature conditions are met.
						5-Time Fc	3435	s	5	60	300	*[Function Defrost] Running time of fans after defrost cycle in order to dry the outside coil.
		5-EEV	3500	1-Circuit 1	3510	1-SuperHeat	3511	°C	5 / 7	5 / 7	15	*[EEV] Superheat set point – *With Glycol*
						2-Anticipation	3512	%	0	80	100	*[EEV] Lennox set point – EEV opening at 1st stage start
						3-P	3513	°C	5	Calc	30	*[EEV] Lennox set point – Proportional factor
						4-I	3514	s	10	35	100	*[EEV] Lennox set point – Integral factor
						5-D	3515	s	0,5	1	3	*[EEV] Lennox set point – Derivate factor
				2-Circuit 2	3520	1-SuperHeat	3521	°C	5 / 7	5 / 7	15	*[EEV] Superheat set point – *With Glycol*
						2-Anticipation	3522	%	0	80	100	*[EEV] Lennox set point – EEV opening at 1st stage start
						3-P	3523	°C	5	Calc	30	*[EEV] Lennox set point – Proportional factor
						4-I	3524	s	10	35	100	*[EEV] Lennox set point – Integral factor
						5-D	3525	s	0,5	1	3	*[EEV] Lennox set point – Derivate factor
				3-Circuit 3	3530	1-SuperHeat	3531	°C	5 / 7	5 / 7	15	*[EEV] Superheat set point – *With Glycol*
						2-Anticipation	3532	%	0	80	100	*[EEV] Lennox set point – EEV opening at 1st stage start
						3-P	3533	°C	5	Calc	30	*[EEV] Lennox set point – Proportional factor
						4-I	3534	s	10	35	100	*[EEV] Lennox set point – Integral factor
						5-D	3535	s	0,5	1	3	*[EEV] Lennox set point – Derivate factor
				4-Circuit 4	3540	1-SuperHeat	3541	°C	5 / 7	5 / 7	15	*[EEV] Superheat set point – *With Glycol*
						2-Anticipation	3542	%	0	80	100	*[EEV] Lennox set point – EEV opening at 1st stage start
						3-P	3543	°C	5	Calc	30	*[EEV] Lennox set point – Proportional factor
						4-I	3544	s	10	35	100	*[EEV] Lennox set point – Integral factor
						5-D	3545	s	0,5	1	3	*[EEV] Lennox set point – Derivate factor
		6-Ventilation	3600			1-Sp Cond.	3611	b	11	16 / *11*	21	*[HP SP] High pressure set point – *for R134a unit*
						2-Reactiv.	3612	%/°C	1	10	50	*[HP Factor] Reactivity set point for fan operation
		7-Option	3700									
		8-Config.	3800	1-Unit	3810	1-Range	3811	Liste	0	~	8 / 6	*[Configuration] Unit model
						2-Size	3812	Liste	0	~	83/126	*[Configuration] Type of unit

Main screen	Code	Description	Code	Description	Code	Description	Code	Unit	Min	Factory	Max	Comments
						3- gaz	3813	Liste : R407c / R22 / R134a	0	~	2	*[Configuration] Type of refrigerant
				2- Compressor	3820	1-EEV	3821	Yes/No	~	~	~	*[Configuration] Electronic expansion valve
						2-LAK	3822	Yes/No	~	~	~	*[Configuration] All season control
						3-Stages +.	3823	Yes/No	~	~	~	*[Configuration] For units with reciprocating compressor extra capacity reduction
						4-Starter	3824	Yes/No	~	~	~	*[Configuration] For units with compressor soft starter
				3- Ventilation	3830	1-Circuit 1	3831	Liste : No / Stages / Modulation / Low Speed	0	0	3	*[Configuration] Fan configuration No = No fans Stages + = Single speed stage fans Modulation = 1 fan with speed control, others with single speed Low Speed = 1 fan with 2 speed others with single speed
						2-Circuit 2	3832	Liste : No / Stages / Modulation / Low Speed	0	0	3	*[Configuration] Fan configuration No = No fans Stages + = Single speed stage fans Modulation = 1 fan with speed control, others with single speed Low Speed = 1 fan with 2 speed others with single speed
						3-Circuit 3	3833	Liste : No / Stages / Modulation / Low Speed	0	0	3	*[Configuration] Fan configuration No = No fans Stages + = Single speed stage fans Modulation = 1 fan with speed control, others with single speed Low Speed = 1 fan with 2 speed others with single speed
						4-Circuit 4	3834	Liste : No / Stages / Modulation / Low Speed	0	0	3	*[Configuration] Fan configuration No = No fans Stages + = Single speed stage fans Modulation = 1 fan with speed control, others with single speed Low Speed = 1 fan with 2 speed others with single speed
				4-Option.	3840	1-Pump	3841	Liste : No / Simple / Double	0	~	2	*[Configuration] Pump configuration
						2-Glycol	3842	%	0	~	50	*[Configuration] Glycol persentage
						3-Recovery	3843	Yes/No	~	~	~	*[Configuration] Heat recovery option

Main screen	Code	Description	Code	Description	Code	Description	Code	Unit	Min	Factory	Max	Comments
				5-Out. Custom.	3850	1-BE50.1	3851	Liste : Not Used / C.1 Alarm / C.2 Alarm / C.3 Alarm : C.4 Alarm / Fans Al. / Pump Al. / Flow Al./ Heat. Mode / C.1 100% / C.2 100% / C.3 100% / C.4 100% / U. 100% / U. On / Z:A / Z:B / Z:C / Uno / Bms / Free	0	0	20	*[Configuration] Free output to be customised (First output of the extension board BE50)
						2-BE50.2	3852		0	0	20	*[Configuration] Free output to be customised (Second output of the extension board BE50)
						3-BE50.3	3853		0	0	20	*[Configuration] Free output to be customised (Third output of the extension board BE50)
						4-BE50.4	3854		0	0	20	*[Configuration] Free output to be customised (Fourth output of the extension board BE50)
				6-In. Custom.	3860	1-BE50.1	3861	Liste : Not Used / Sw Setpoint / Sw Cool. / Sw Heat. / C1 Disable / C2 Disable / C3 Disable / C4 Disable / Sw Unoc. / Free	0	0	9	*[Configuration] Free input to be customised (input of the extension board BE50)
						2-BE50.2	3862		0	0	9	*[Configuration] Free input to be customised (input of the extension board BE50)
						3-BE50.3	3863		0	0	9	*[Configuration] Free input to be customised (input of the extension board BE50)
						4-BE50.4	3864		0	0	9	*[Configuration] Free input to be customised (input of the extension board BE50)
				7-In.% Custom.	3870	1-BE50.1	3871	Liste : Not Used / S.P Offset / Free NTC	0	0	2	*[Configuration] Free input to be customised (input of the extension board BE50)
						2-BE50.2	3872		0	0	2	*[Configuration] Free input to be customised (input of the extension board BE50)
						3-BE50.3	3873		0	0	2	*[Configuration] Free input to be customised (input of the extension board BE50)
						4-BE50.4	3874		0	0	2	*[Configuration] Free input to be customised (input of the extension board BE50)
		9-Com.	3900	1-Display	3910	1-Standard Sp	3911	Yes/No	~	Off	~	*Allows a reset of ALL set point to standard factory settings (when available).No possible for configurations. and clock as there is no factory settings for these.
				2-Master/Slave	3920	1-ID	3921	~	1	~	4 / 2	*[Configuration] Identification address for the unit from 1 to 4 for master slave operation.
						2-Number	3922	~	1	1	4 / 2	*[Configuration] Number of units on the BUS. Unit with address N°1 is always the master.

Main screen	Code	Description	Code	Description	Code	Description	Code	Unit	Min	Factory	Max	Comments
						3-Type	3923	Liste : Not Used / Backup / Rol.Backup / Cascade	0	0	2	*Master / Slave relationship: refer to page 7 for details
						4-Outlet	3924	Liste : Not Used / M/S Temp. / M/S Aver.	0	0	2	*Master / Slave relationship: refer to page 7 for details
						5-Outside	3925	Liste : Not Used / M/S Temp. / M/S Aver.	0	0	2	*Master / Slave relationship: refer to page 7 for details
				3-BMS	3930	1-ID	3931	~	1	1	200	*[Configuration] Identification number on the 485 Bus
						2-Type	3932	Liste : Climatic / ModBus / LonWorks/ Web	0	0	2	*[Configuration] Type of BMS 0 Mode Lennox Climatic; 1 MODBUS; 2 LONWORKS
						3-Baud	3933	Liste : 1200 / 2400 / 4800 / 9600 / 19200	0	3	4	BMS communication speed between 1200BDS and 19800
						4-Watchdog	3934	~	0	0	1000	*[BMS] Activation of the control by a computer or an automat - mode BMS is activated if this value is different from zero, This value is decreased every second
						5-BMS Unoc.	3935	On/Off	~	Off	~	*[BMS] Cancel the override unoccupied mode

FAULTS CODES

1	Water Flow	Flow switch cut off	See page 29 & 36
4	Filters	Dirty	
5	Filters	Missing	
11	Electrical Heater	Faulty	
12	Outlet water T° or Supply air T°	Too high T°	See page 28
13	Intlet water T° or Room air T°	Too Low T°	See page 28
14	Gas Burner, 1	Faulty	
15	Gas Burner, 2	Faulty	
22	Outlet water T° or Supply air T°	Too Low T°	See page 28
23	Intlet water T° or Room air T°	Too high T°	See page 28
31	Humidifier	Faulty	
32	Room Humidity	Humidity Too Low	
33	Room Humidity	Humidity Too High	
40	Flow, Pump	Failure	See page 36
41	Pump, 1	Electric failure	See page 38
42	Pump, 2	Electric failure	See page 38
70	Real Time Clock	Faulty	
71	BE50, 1	Faulty communication	See page 30
72	BE50, 2	Faulty	
73	BE50, 3	Faulty	
74	BE50, 4	Faulty	
75	BE50, 5	Faulty	
76	BM50, Slave	Faulty	
80	Remote S.Point	Faulty	
81	Intlet water T° or Room air T°	Faulty Sensor	See page 33
82	Room Humidity	Faulty Sensor	
83	Outside air Temperature	Faulty Sensor	See page 33
84	Outside Humidity	Faulty Sensor	
85	Outlet or Supply T.	Faulty Sensor	
86	Inlet, Heat Recovery	Faulty Sensor	See page 33
87	Outlet, Heat Recovery	Faulty Sensor	See page 33
88	Return or Mixing T.	Faulty Sensor	
90	Air, Condenser fan	Faulty	See page 37
91	Blower, Fan	Faulty	
92	Air, Condenser fan	Faulty, System 1	See page 37
93	Air, Condenser fan	Faulty, System 2	See page 37
94	Air, Condenser fan	Faulty, System 3	See page 37
95	Air, Condenser fan	Faulty, System 4	See page 37
96	Water, Condenser	Temp. Too low	
97	Water, Condenser	Temp. Too High	
98	Water, Condenser	Faulty, Flow	
99	Fire / Smoke	Faulty	
111	High Pressure	Faulty Sensor, 1	See page 33
112	Low presure	Faulty Sensor, 1	
114	Circuit 1	Compressor elec. failure	See page 34
115	Circuit 1	High Pressure cut	See page 35
117	Circuit 1	Low Pressure cut	See page 31
118	Circuit 1	Risk of Frosting	See page 32
121	High Pressure	Faulty Sensor, 2	See page 33
122	Low presure	Faulty Sensor, 2	
124	Circuit 2	Compressor elec. failure	See page 34
125	Circuit 2	High Pressure cut	See page 35

127	Circuit 2	Low Pressure Cut	See page 31
128	Circuit 2	Risk of Frosting	See page 32
131	High Pressure	Faulty Sensor, 3	See page 33
132	Low presure	Faulty Sensor, 3	See page 33
134	Circuit 3	Compressor elec. failure	See page 34
135	Circuit 3	High Pressure cut	See page 35
137	Circuit 3	Low Pressure Cut	See page 31
138	Circuit 3	Risk of Frosting	See page 32
141	High Pressure	Faulty Sensor, 4	See page 33
142	Low presure	Faulty Sensor, 4	See page 33
144	Circuit 4	Compressor elec. failure	See page 34
145	Circuit 4	High Pressure cut	See page 35
147	Circuit 4	Low Pressure Cut	See page 31
148	Circuit 4	Risk of Frosting	See page 32
2n0	Circuit n	EEV n, Wrong addressing	See page 21
2n1	Low Superheat	EEV n, Error	
2n2	High Suction T.	EEV n, Error	
2n3	MOP	EEV n, Error	
2n4	LOP	EEV n, Error	
2n5	Valve Not Closed	EEV n, Error	
2n6	LP sensor or suction probe	EEV n, Error	See page 33
2n7	Motor	EEV n, Error	
2n8	EEPROM	EEV n, Error	
2n9	Battery	EEV n, Error	

BMS Points

ModBus

Analogical

@ (hexa)	@ (deci)				WA	LC	DS50
01H	**1**	R/W	1 = 1 s	[BMS] Activation of the control by a computer or an automat - mode BMS is activated if this value is different from zero, This value is decreased every second	√	√	**3934**
02H	**2**	R/W	1 = 1	[Unit] without pump: 0=Started; 1=Stopped [Unit] with pump: 1=Stopped; 2:P1 Only; 3=P2 Only; 4=P1-N P2-S; 5=P2-N P1-S; 6=P1/P2 by clock	√	√	**3112 BMS**
03H	**3**	R/W	1 = 1	[Unit] Change-over: 0=Cool. Only; 1=Heat. Only; 2=Auto. Pump; 3=Auto. No Pump	√		**3311 BMS**
04H	**4**	R/W	1 = 1	[Unit] Activation of the circuits: bit.0=C1; bit.1=C2; bit.2=C3; bit.3=C4	√	√	**3411 BMS**
05H	**5**	R/W	10 = 1.0°c	[Occupation][Water SP] Required maximum water temperature in °C. Cooling set point	√	√	**3321 BMS**
06H	**6**	R/W	10 = 1.0°c	[Occupation][Water SP] Required minimum water temperature in °C. Heating set point	√		**3331 BMS**
07H	**7**	R/W	10 = 1.0°c	[Inoccupation][Water SP] Required maximum water temperature in °C. Cooling set point	√	√	**3321 Uno**
08H	**8**	R/W	10 = 1.0°c	[Inoccupation][Water SP] Required minimum water temperature in °C. Heating set point	√		**3331 Uno**
09H	**9**	R/W		*not used*			
0AH	**10**	R/W		*not used*			
0BH	**11**	R/W		*not used*			
0CH	**12**	R/W	1 = 1h	[Clock] Hour	√	√	**3121**
0DH	**13**	R/W	1 = 1m	[Clock] Minute	√	√	**3122**
0EH	**14**	R/W	1 = 1	[Clock] Day of the month	√	√	**3123**
0FH	**15**	R/W	1 = 1	[Clock] Month	√	√	**3124**
10H	**16**	R/W	1 = 2001	[Clock] Year	√	√	**3125**
11H	**17**	R/W		*not used*			
12H	**18**	R/W		*not used*			
13H	**19**	R/W	10 = 1.0°c	[BMS] Outdoor temperature coming from the BMS	√	√	**...**
14H	**20**	R/W		*not used*			
15H	**21**	R/W		*not used*			
16H	**22**	R/W		*not used*			
17H	**23**	R/W		*not used*			
18H	**24**	R/W		*not used*			
19H	**25**	R/W		*not used*			
1AH	**26**	R/W		*not used*			
1BH	**27**	R/W		*not used*			
1CH	**28**	R/W		*not used*			
1DH	**29**	R/W		*not used*			
1EH	**30**	R/W		*not used*			
1FH	**31**	R/W		*not used*			
20H	**32**	R/W		*not used*			

21H	**33**	R	1 = 1	[Alarm] Code Error	√	√	**1000**
22H	**34**	R	10 = 1.0°c	[Temperature] Intlet, Water	√	√	**2112**
23H	**35**	R	10 = 1.0°c	[Temperature] Outdoor, Air	√	√	**2111**
24H	**36**	R	10 = 1.0°c	[Temperature] Outlet, Water	√	√	**2113**
25H	**37**	R	10 = 1.0b	[Pressure] High, Circuit 1	√	√	**2125**
26H	**38**	R	10 = 1.0b	[Pressure] Low, Circuit 1	√	√	**2126**
27H	**39**	R	10 = 1.0b	[Pressure] High, Circuit 2	√	√	**2135**
28H	**40**	R	10 = 1.0b	[Pressure] Low, Circuit 2	√	√	**2136**
29H	**41**	R	10 = 1.0b	[Pressure] High, Circuit 3		√	**2145**
2AH	**42**	R	10 = 1.0b	[Pressure] Low, Circuit 3		√	**2146**
2BH	**43**	R	10 = 1.0b	[Pressure] High, Circuit 4		√	**2155**
2CH	**44**	R	10 = 1.0b	[Pressure] Low, Circuit 4		√	**2156**
2DH	**45**	R	1 = 1%	[% of opening] Fan, Modulation, Circuit 1	√	√	**2619**
2EH	**46**	R	1 = 1%	[% of opening] Fan, Modulation, Circuit 2	√	√	**2629**
2FH	**47**	R	1 = 1%	[% of opening] Fan, Modulation, Circuit 3		√	**2639**
30H	**48**	R	1 = 1%	[% of opening] Fan, Modulation, Circuit 4		√	**2649**
31H	**49**	R	10 = 1.0°c	[Dry contact] Temperature, Free 1, BE50-J9-B1	√	√	**2191**
32H	**50**	R	10 = 1.0°c	[Dry contact] Temperature, Free 2, BE50-J9-B2	√	√	**2192**
33H	**51**	R	10 = 1.0°c	[Dry contact] Temperature, Free 3, BE50-J10-B3	√	√	**2193**
34H	**52**	R	10 = 1.0°c	[Dry contact] Temperature, Free 4, BE50-J10-B4	√	√	**2194**
35H	**53**	R	1 = 1	[Fan] Numbers which run, Circuit 1	√	√	**…**
36H	**54**	R	1 = 1	[Fan] Numbers which run, Circuit 2	√	√	**…**
37H	**55**	R	1 = 1	[Fan] Numbers which run, Circuit 3		√	**…**
38H	**56**	R	1 = 1	[Fan] Numbers which run, Circuit 4		√	**…**
39H	**57**	R	10 = 1.0°c	[EEV] Current superheating value, Circuit 1	√	√	**2121**
3AH	**58**	R	10 = 1.0°c	[EEV] Current superheating value, Circuit 2	√	√	**2131**
3BH	**59**	R	10 = 1.0°c	[EEV] Current superheating value, Circuit 3		√	**2141**
3CH	**60**	R	10 = 1.0°c	[EEV] Current superheating value, Circuit 4		√	**2151**
3DH	**61**	R	10 = 1.0°c	[EEV] Saturated evaporation temperature, Circuit 1	√	√	**2124**
3EH	**62**	R	10 = 1.0°c	[EEV] Saturated evaporation temperature, Circuit 2	√	√	**2134**
3FH	**63**	R	10 = 1.0°c	[EEV] Saturated evaporation temperature, Circuit 3		√	**2144**
40H	**64**	R	10 = 1.0°c	[EEV] Saturated evaporation temperature, Circuit 4		√	**2154**

Logical

@ (hexa)	@ (deci)				WA	LC	DS50
01H	**1**	R/W	L	[On/Off] Unit	√	√	**3111**
02H	**2**	R/W	L	[Reset] Discharges the safety measures of the unit	√	√	**3113**
03H	**3**	R/W	L	*not used*			
04H	**4**	R/W	L	*not used*			
05H	**5**	R/W	L	[BMS] Activation of the Inoccupation mode [Off] occupation mode - [On] inoccupation mode	√	√	**3935**
06H	**6**	R/W	L	*not used*			
07H	**7**	R/W	L	*not used*			
08H	**8**	R/W	L	*not used*			
09H	**9**	R/W	L	*not used*			
0AH	**10**	R/W	L	*not used*			
0BH	**11**	R/W	L	*not used*			
0CH	**12**	R/W	L	*not used*			
0DH	**13**	R/W	L	*not used*			
0EH	**14**	R/W	L	*not used*			
0FH	**15**	R/W	L	*not used*			
10H	**16**	R/W	L	[Clock] [OFF] read hour & minute [ON] write hour & minute	√	√	**...**
11H	**17**	R/W	L	*not used*			
12H	**18**	R/W	L	[Dry contact] Digital Output, Free 2, BE50-J5-NO1	√	√	**2171**
13H	**19**	R/W	L	[Dry contact] Digital Output, Free 3, BE50-J6-NO2	√	√	**2172**
14H	**20**	R/W	L	[Dry contact] Digital Output, Free 4, BE50-J7-NO3	√	√	**2173**
15H	**21**	R/W	L	[Dry contact] Digital Output, Free 5, BE50-J8-NO4	√	√	**2174**
16H	**22**	R/W	L	*not used*			
17H	**23**	R/W	L	*not used*			
18H	**24**	R/W	L	*not used*			
19H	**25**	R/W	L	*not used*			
1AH	**26**	R/W	L	*not used*			
1BH	**27**	R/W	L	*not used*			
1CH	**28**	R/W	L	*not used*			
1DH	**29**	R/W	L	*not used*			
1EH	**30**	R/W	L	*not used*			
1FH	**31**	R/W	L	*not used*			
20H	**32**	R/W	L	*not used*			
21H	**33**	R	L	[Alarm] General	√	√	**1000**
22H	**34**	R	L	[On/Off] Pump, 1	√	√	**2315**
23H	**35**	R	L	[On/Off] Pump, 2	√	√	**2317**
24H	**36**	R	L	[On/Off] Compressor 1, Circuit 1	√	√	**2416**
25H	**37**	R	L	[On/Off] Compressor 2, Circuit 1	√	√	**2426**
26H	**38**	R	L	[On/Off] Compressor 3, Circuit 1 (WA) or Compressor 1, Circuit 3 (LC)	√	√	**2436**
27H	**39**	R	L	[On/Off] Compressor, Heat pump, Circuit 1	√		**2417**
28H	**40**	R	L	[On/Off] Compressor 1, Circuit 2	√	√	**2446**
29H	**41**	R	L	[On/Off] Compressor 2, Circuit 2	√	√	**2456**
2AH	**42**	R	L	[On/Off] Compressor 3, Circuit 2 (WA) or Compressor 1, Circuit 4 (LC)	√	√	**2466**

2BH	**43**	R	L	[On/Off] Compressor, Heat pump, Circuit 2	√		**2437**
2CH	**44**	R	L	*not used*			
2DH	**45**	R	L	*not used*			
2EH	**46**	R	L	*not used*			
2FH	**47**	R	L	*not used*			
30H	**48**	R	L	*not used*			
31H	**49**	R	L	*not used*			
32H	**50**	R	L	*not used*			
33H	**51**	R	L	[Dry contact] Digital Input, Free 3, BE50-J4-ID1	√	√	**2181**
34H	**52**	R	L	[Dry contact] Digital Input, Free 4, BE50-J4-ID2	√	√	**2182**
35H	**53**	R	L	[Dry contact] Digital Input, Free 5, BE50-J4-ID3	√	√	**2183**
36H	**54**	R	L	[Dry contact] Digital Input, Free 6, BE50-J4-ID4	√	√	**2184**
37H	**55**	R	L	[On/Off] Fan 1, High speed, Circuit 1	√	√	**2614**
38H	**56**	R	L	[On/Off] Fan 2, Circuit 1	√	√	**2615**
39H	**57**	R	L	[On/Off] Fan 3, Circuit 1	√	√	**2616**
3AH	**58**	R	L	[On/Off] Fan 4, Circuit 1	√	√	**2617**
3BH	**59**	R	L	[On/Off] Fan 5, Circuit 1		√	**2618**
3CH	**60**	R	L	[On/Off] Fan 1, High speed, Circuit 2	√	√	**2624**
3DH	**61**	R	L	[On/Off] Fan 2, Circuit 2	√	√	**2625**
3EH	**62**	R	L	[On/Off] Fan 3, Circuit 2	√	√	**2626**
3FH	**63**	R	L	[On/Off] Fan 4, Circuit 2	√	√	**2627**
40H	**64**	R	L	[On/Off] Fan 5, Circuit 2		√	**2628**

LonWorks

Type		Name NV	Type NV	Direction	Index		WA	LC	DS50
ANL	1	I_Sp_WCool_1_BMS	105	input	1	[Occupation][Water SP] Required maximum water temperature in °C. Cooling set point	√	√	**3321 (BMS)**
ANL	1	O_Sp_WCool_1_BMS	105	output	1				
ANL	2	I_Sp_WHeat_1_BMS	105	input	2	[Occupation][Water SP] Required minimum water temperature in °C. Heating set point	√		**3331 BMS**
ANL	2	O_Sp_WHeat_1_BMS	105	output	2				
ANL	3	I_Sp_WCool_1_Uno	105	input	3	[Inoccupation][Water SP] Required maximum water temperature in °C. Cooling set point	√	√	**3321 (Uno)**
ANL	3	O_Sp_WCool_1_Uno	105	output	3				
ANL	4	I_Sp_WHeat_1_Uno	105	input	4	[Inoccupation][Water SP] Required minimum water temperature in °C. Heating set point	√		**3331 Uno**
ANL	4	O_Sp_WHeat_1_Uno	105	output	4				
ANL	17	O_Ia_TEEG	105	output	17	[Temperature] Intlet, Water	√	√	**2112**
ANL	18	O_T_Outside	105	output	18	[Temperature] Outdoor, Air	√	√	**2111**
ANL	19	O_Ia_TSEG	105	output	19	[Temperature] Outlet, Water	√	√	**2113**
ANL	20	O_Ia_P_HP_1	105	output	20	[Pressure] High, Circuit 1 (Bar)	√	√	**2125**
ANL	21	O_Ia_P_BP_1	105	output	21	[Pressure] Low, Circuit 1 (Bar)	√	√	**2126**
ANL	22	O_Ia_P_HP_2	105	output	22	[Pressure] High, Circuit 2 (Bar)	√	√	**2135**
ANL	23	O_Ia_P_BP_2	105	output	23	[Pressure] Low, Circuit 2 (Bar)	√	√	**2136**
ANL	24	O_Ia_P_HP_3	105	output	24	[Pressure] High, Circuit 3 (Bar)		√	**2145**
ANL	25	O_Ia_P_BP_3	105	output	25	[Pressure] Low, Circuit 3 (Bar)		√	**2146**
ANL	26	O_Ia_P_HP_4	105	output	26	[Pressure] High, Circuit 4 (Bar)		√	**2155**
ANL	27	O_Ia_P_BP_4	105	output	27	[Pressure] Low, Circuit 4 (Bar)		√	**2156**

Type	Index	Name NV	Type NV	Direction	Index		WA	LC	DS50
INT	1	I_Sp_BMS_Dog	8	input	208	[BMS] Activation of the control by a computer or an automat - mode BMS is activated if this value is different from zero, This value is decreased every second	√	√	**3934**
INT	1	O_Sp_BMS_Dog	8	output	208				
INT	2	I_Sp_RunUnit_BMS	8	input	209	[Unit] without pump: 0=Started; 1=Stopped [Unit] with pump: 1=Stopped; 2:P1 Only; 3=P2 Only; 4=P1-N P2-S; 5=P2-N P1-S; 6=P1/P2 by clock	√	√	**3112 (BMS)**
INT	2	O_Sp_RunUnit_BMS	8	output	209				
INT	3	I_Sp_ChOver_BMS	8	input	210	[Unit] Change-over: 0=Cool. Only; 1=Heat. Only; 2=Auto. Pump; 3=Auto. No Pump	√		**3311 BMS**
INT	3	O_Sp_ChOver_BMS	8	output	210				
INT	4	I_Sp_Rotat_BMS	8	input	211	[Unit] Activation of the circuits: (WA) 0=C1 Only; 1=C2 Only; 2=C1/C2 by clock (LC) bit.0=C1; bit.1=C2; bit.2=C3; bit.3=C4	√	√	**3411 (BMS)**
INT	4	O_Sp_Rotat_BMS	8	output	211				
INT	17	O_Error_Codes	8	output	224	[Alarm] Code Error	√	√	**1000**
INT	18	O_R_FCoil_PWM_1	81	output	225	[% of opening] Fan, Modulation, Circuit 1	√	√	**2619**
INT	19	O_R_FCoil_PWM_2	81	output	226	[% of opening] Fan, Modulation, Circuit 2	√	√	**2629**
INT	20	O_R_FCoil_PWM_3	81	output	227	[% of opening] Fan, Modulation, Circuit 3		√	**2639**
INT	21	O_R_FCoil_PWM_4	81	output	228	[% of opening] Fan, Modulation, Circuit 4		√	**2649**

Type	Index	Name NV	Type NV	Direction	Index		WA	LC	DS50
DGT	1	I_Sp_On_Unit	95	input	415	[On / Off] Unit	√	√	**3111**
DGT	1	O_Sp_On_Unit	95	output	415				
DGT	2	I_Sp_Reset	95	input	416	[Reset] Discharges the safety measures of the unit	√	√	**3112**
DGT	2	O_Sp_Reset	95	output	416				
DGT	3	I_Sp_Unoc	95	input	417	[BMS] Activation of the Inoccupation mode [Off] occupation mode - [On] inoccupation mode	√	√	**3935**
DGT	3	O_Sp_Unoc	95	output	417				
DGT	17	O_Od_Alarm	95	output	431	[Alarm] General	√	√	**1000**
DGT	18	O_Od_Pump_1	95	output	432	[On/Off] Pump, 1	√	√	**2315**
DGT	19	O_Od_Pump_2	95	output	433	[On/Off] Pump, 2	√	√	**2317**
DGT	20	O_Od_Comp_11	95	output	434	[On/Off] Compressor 1, Circuit 1	√	√	**2416**
DGT	21	O_Od_Comp_21	95	output	435	[On/Off] Compressor 2, Circuit 1	√	√	**2426**
DGT	22	O_Od_Comp_31_3	95	output	436	[On/Off] Compressor 3, Circuit 1 (WA) or Compressor 1, Circuit 3 (LC)	√	√	**2456**
DGT	23	O_Od_CompHPump_1	95	output	437	[On/Off] Compressor, Heat pump, Circuit 1	√		**2417**
DGT	24	O_Od_Comp_12	95	output	438	[On/Off] Compressor 1, Circuit 2	√	√	**2436**
DGT	25	O_Od_Comp_22	95	output	439	[On/Off] Compressor 2, Circuit 2	√	√	**2446**
DGT	26	O_Od_Comp_32_4	95	output	440	[On/Off] Compressor 3, Circuit 2 (WA) or Compressor 1, Circuit 4 (LC)	√	√	**2466**
DGT	27	O_Od_CompHPump_2	95	output	441	[On/Off] Compressor, Heat pump, Circuit 2	√		**2447**
DGT	28	O_Od_FCoil_1	95	output	442	[On/Off] Fans, Circuit 1	√	√	**2614**
DGT	29	O_Od_FCoil_2	95	output	443	[On/Off] Fans, Circuit 2	√	√	**2624**
DGT	30	O_Od_FCoil_3	95	output	444	[On/Off] Fans, Circuit 3		√	**2634**
DGT	31	O_Od_FCoil_4	95	output	445	[On/Off] Fans, Circuit 4		√	**2644**

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